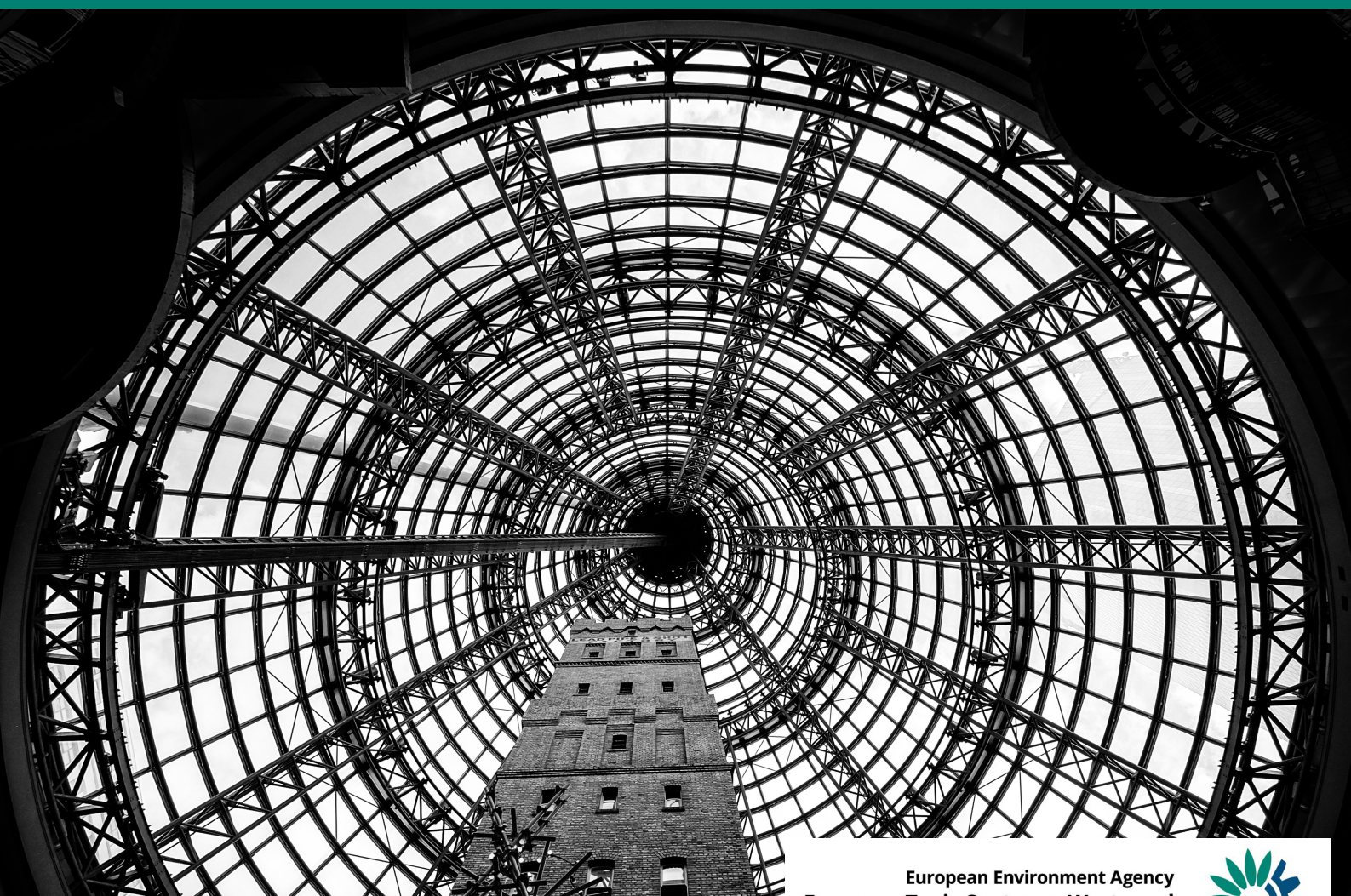


Resource efficiency and circular economy in Europe – even more from less

An overview of policies, approaches and targets of Belgium in 2018



European Environment Agency
European Topic Centre on Waste and
Materials in a Green Economy



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Contents

Acknowledgements	1
Belgium, facts and figures	2
Policy framework.....	6
Driving forces for material resource efficiency and circular economy	6
Dedicated national strategies or roadmaps for material resource efficiency and a circular economy	9
Overview of dedicated national or sectoral strategies for raw materials.....	15
Policies which include elements of material resource efficiency	16
Institutional setup and stakeholder engagement	22
Approaches to resource efficiency and circular economy policy evaluation.....	25
Monitoring and targets	26
Targets for resource efficiency and circular economy	26
Indicators to monitor progress towards a resource-efficient circular economy	29
Resource efficiency, circular economy and the 2030 Sustainable Development Goals	33
Examples of innovative approaches and good practice.....	35
Examples of good practice and innovative approaches.....	35
Seeking synergies with other policy areas	44
Resource efficiency and circular economy policy initiatives from subnational to local level.....	47
Other resources.....	50
Examples of policies which go beyond “material resources”	50
The way forward.....	51
Reflections on future directions of policies on resource efficiency and circular economy	51

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This country profile was prepared as part of the 2019 EEA review of material resource efficiency, circular economy and raw material supply policies, which aimed to collect, analyse, and disseminate information about experience with the development and implementation of these policies in EEA member and cooperating countries.

At the time of writing, a summary report is being finalised. The report reflects on trends, similarities and differences in policy responses, showcases selected policy initiatives from member countries and identifies possible considerations for the development of future policies.

These country profiles were compiled and finalised by members from the European Topic Centre on Waste and Materials in a Green Economy, namely Bart Ullstein, Bettina-Bahn Walkowiak, Jeroen Gillabel, Margareta Wahlström, Jutta-Laine Ylijoki, Dirk Nelen, Theo Geerken, Veronique Van Hoof and Evelien Dils. The responsible EEA project managers for the work were Pawel Kazmierczyk and Daniel Montalvo.

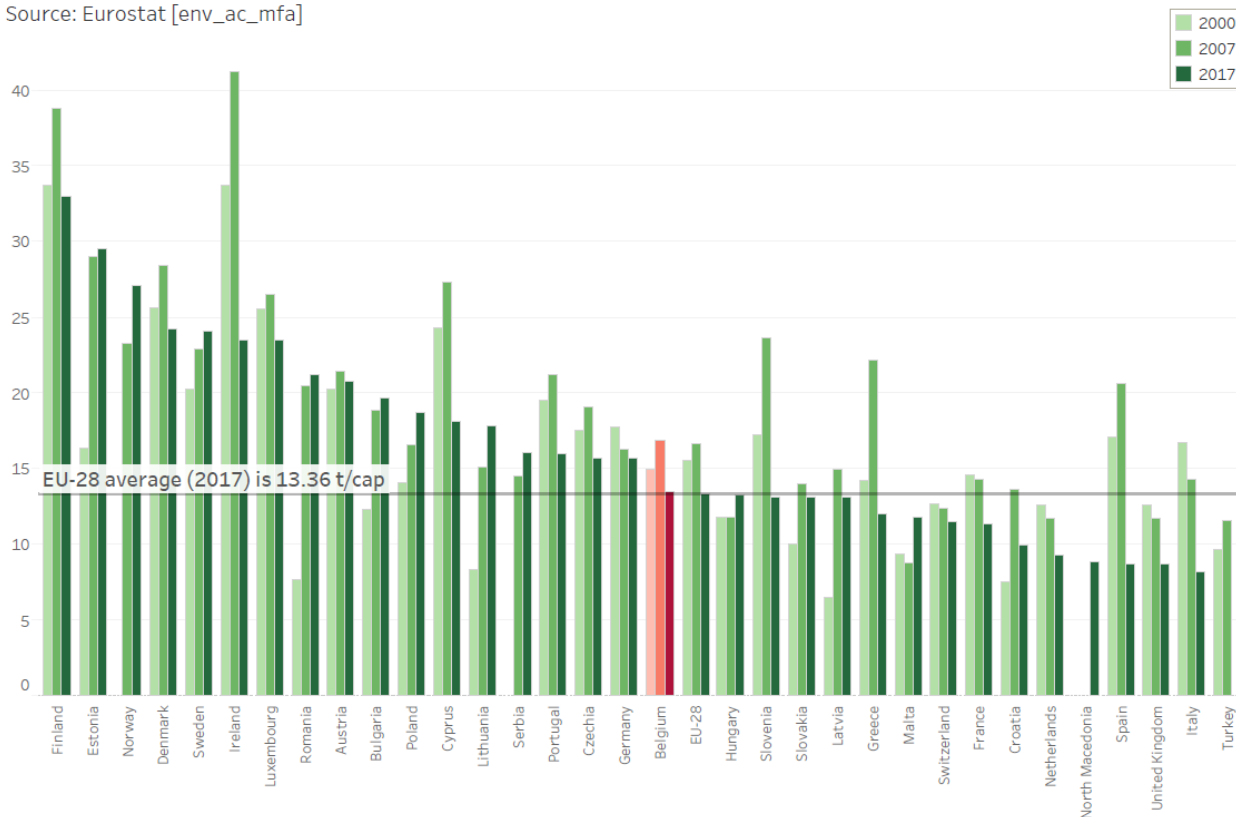
Belgium, facts and figures

Note: data in this section was sourced from Eurostat databases, except where noted otherwise

	GDP: EUR 439.1 billion (2.8 % of total EU28 in 2017)
	Per capita GDP: EUR 38,700 (purchasing power standard) (128.8 % of EU28 average per capita figure in 2017)
	Use of materials (domestic material consumption (DMC)) 153.7 million tonnes DMC (2.3 % of EU28 total in 2017) 13.5 tonnes DMC/capita (101.1 % of EU28 average per capita in 2017)
	Structure of the economy: agriculture: 0.7 % industry: 22.0 % services: 77.3%
	Surface area: 30.5 thousand square kilometres (km ²) (0.7 % of total EU28)
	Population: 11.3 million (2.2 % of EU-28 total in 2017)

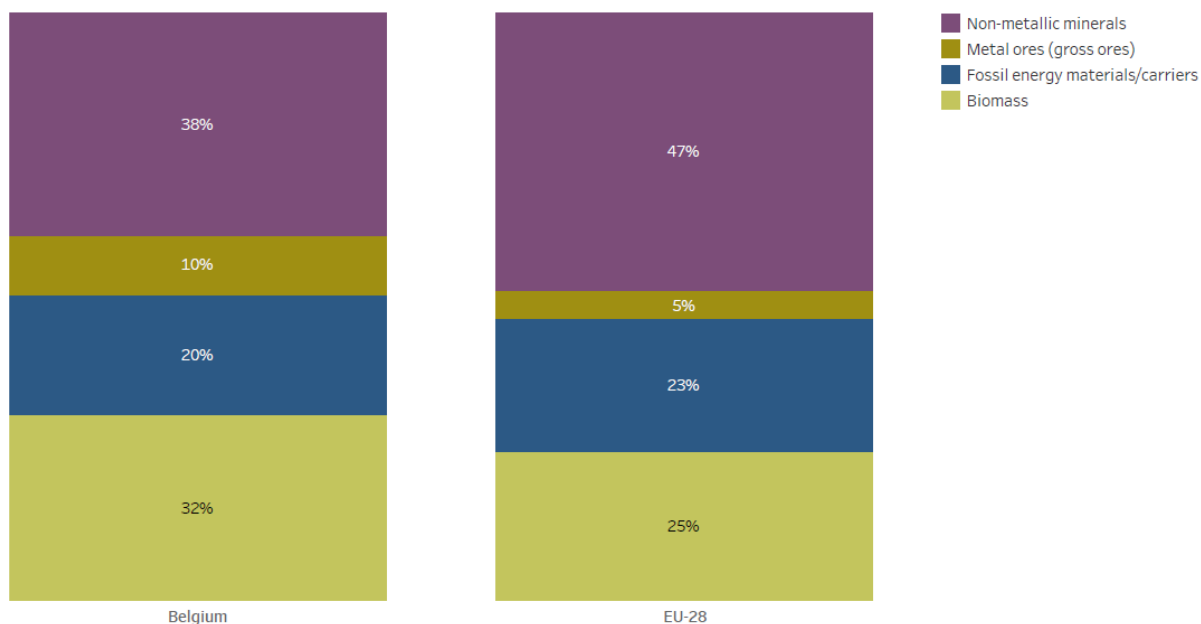
Use of materials (DMC) per person in Europe, 2000, 2007 and 2017, tonnes DMC per capita.

Source: Eurostat [env_ac_mfa]



Belgium & EU-28. Domestic Material Consumption by material category, 2017.

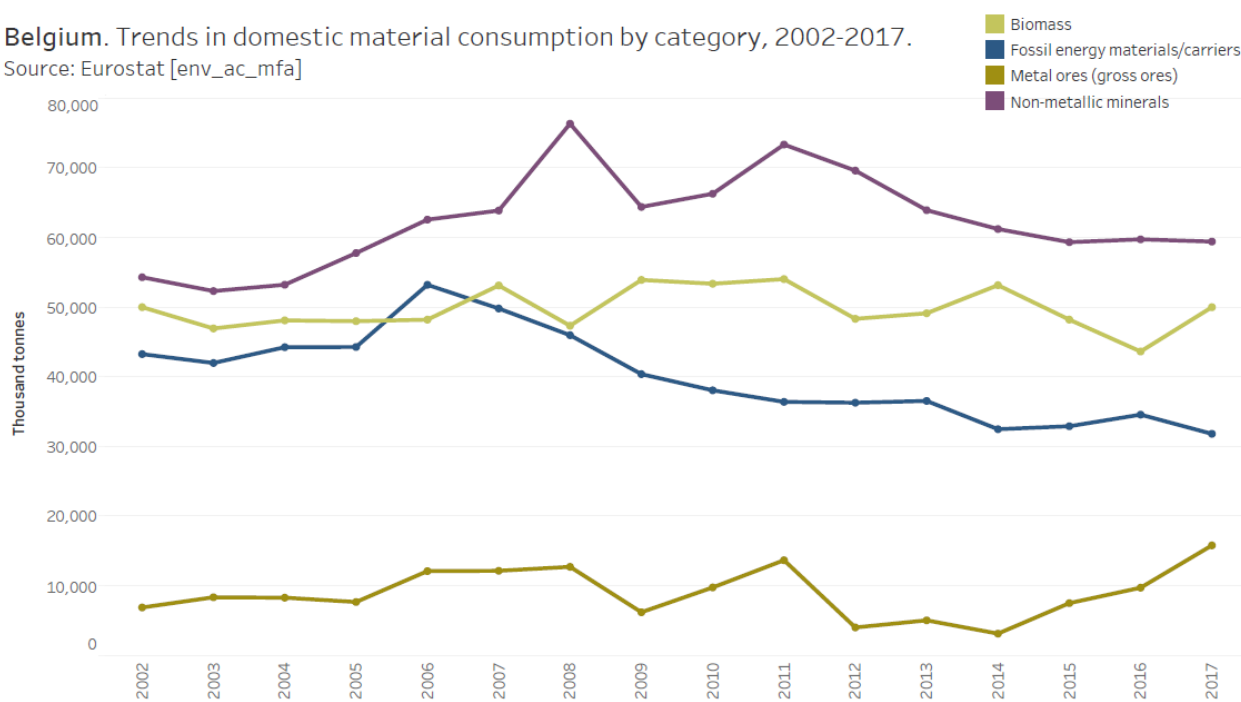
Source: Eurostat [env_ac_mfa]



Note: The domestic material consumption categories 'other products' and 'waste for final treatment and disposal' are excluded from the figure.

Belgium. Trends in domestic material consumption by category, 2002-2017.

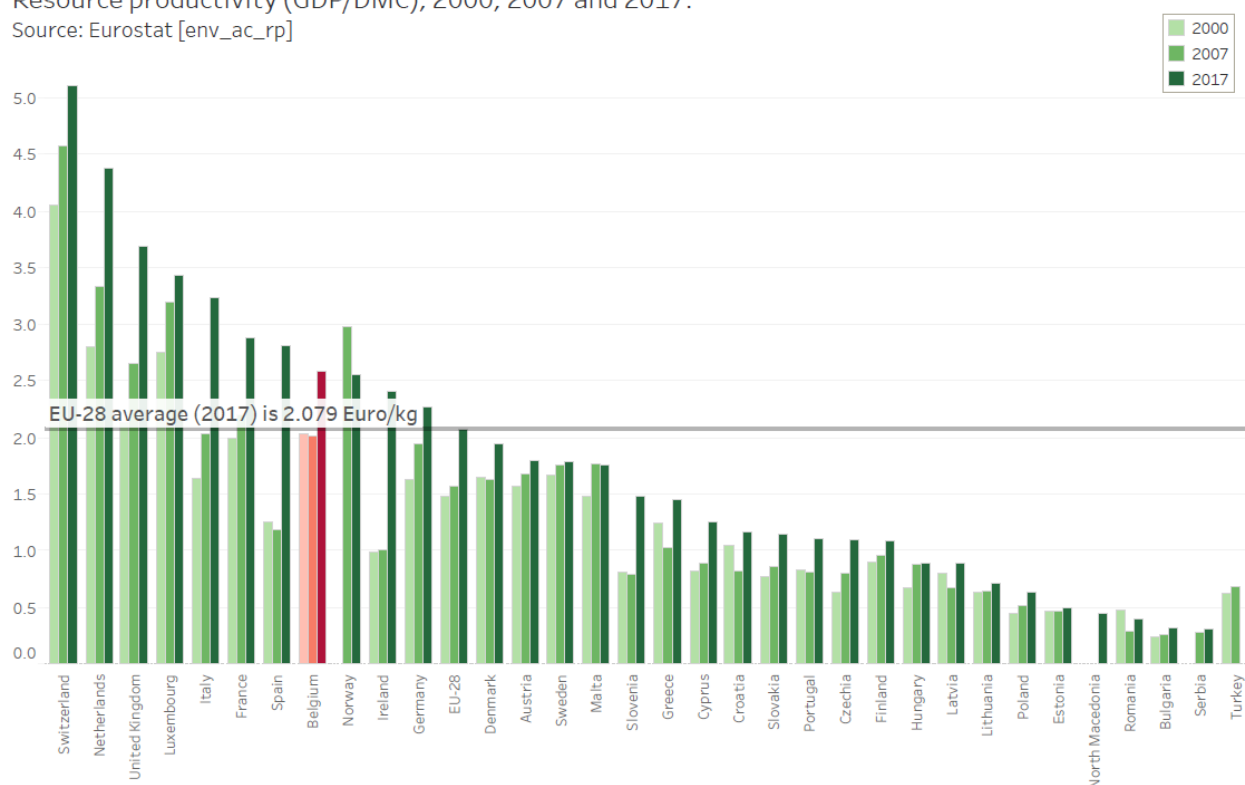
Source: Eurostat [env_ac_mfa]



Note: The domestic material consumption categories 'other products' and 'waste for final treatment and disposal' are excluded from the figure.

Resource productivity (GDP/DMC), 2000, 2007 and 2017.

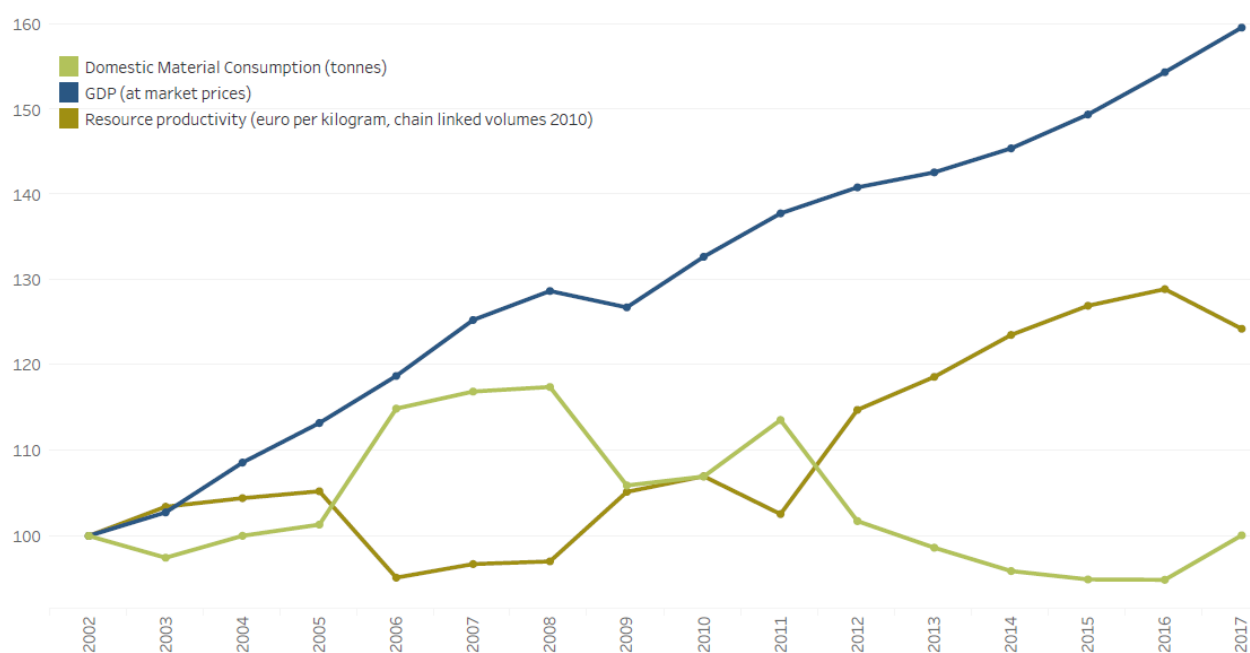
Source: Eurostat [env_ac_rp]



Note: GDP expressed in chain linked volumes 2010.

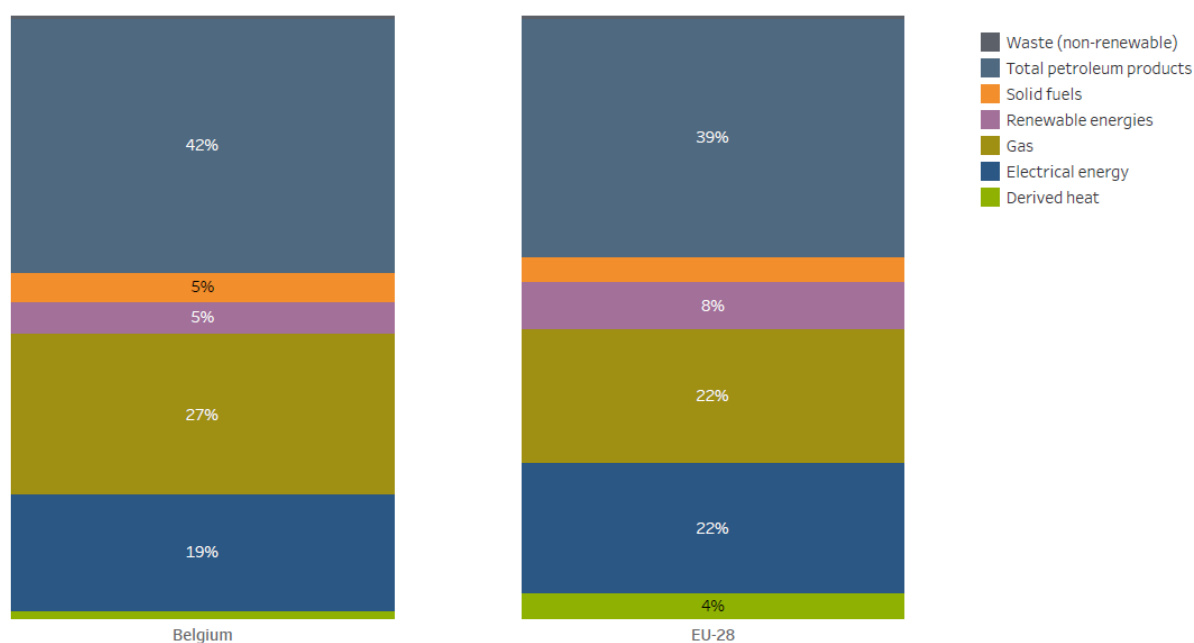
Belgium. GDP, DMC and resource productivity trends, 2002-2017, index 2002=100.

Source: Eurostat [env_ac_mfa], [env_ac_rp] & [nama_10_gdp]



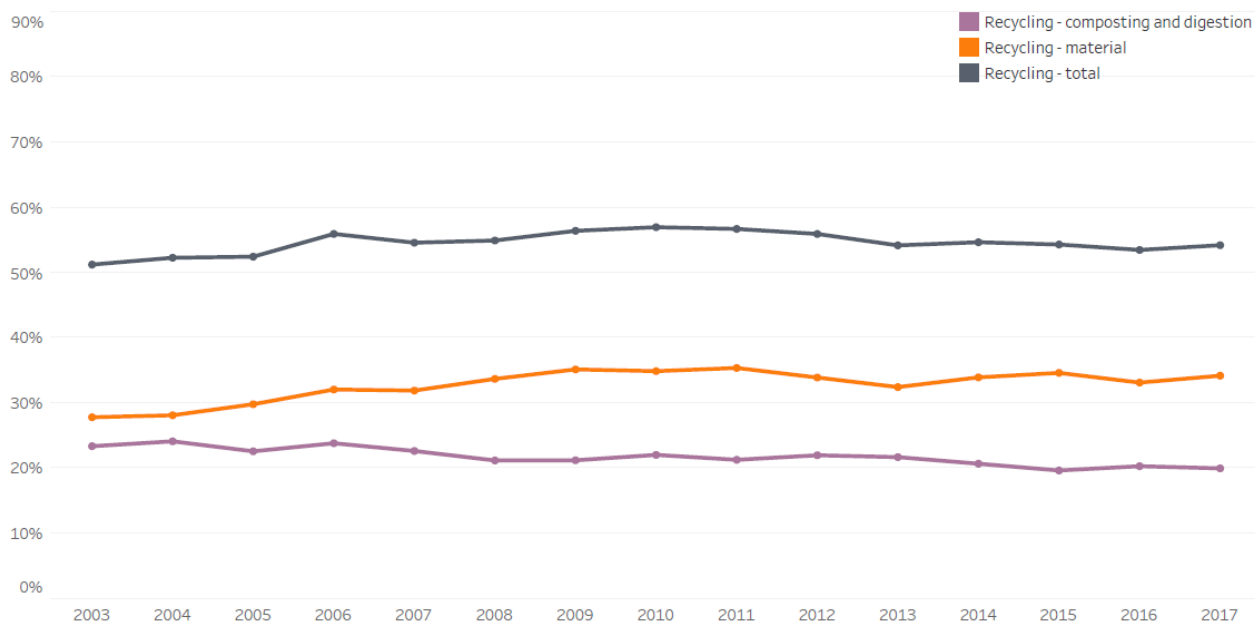
Belgium & EU-28. Primary energy consumption by energy product, 2016.

Source: Eurostat [nrg_100a]



Belgium. Recycling of municipal waste, 2003-2017, as share of total waste treatment.

Source: Eurostat [env_wasmun]



Note: The amount of municipal waste treatment is reported for the treatment operations incineration (with and without energy recovery), recycling, composting and landfilling.

NOTE: Belgium does not have a dedicated national resource efficiency or circular economy strategy/action plan, mainly due to its constitutional set-up. The issue of material resource efficiency and circular economy, as it is typically cross-cutting, involves several domains and policy levels. This means that the Belgian regions (Wallonia, Flanders and Brussels) and the federal level are all concerned, each taking care of its own competences.

Generally speaking, the Belgian Federal State is competent for matters whose technical and economic indivisibility requires equal treatment at the national level. For instance, major environmental issues such as water, air quality, biodiversity, climate change, etc., are dealt with mainly by the regions. On the other hand, the federal government is competent when it comes to acting on these issues through products or services including polluting product emissions, energy consumption, product design, chemical substances in products, labelling, and the provision of information on the product or service, etc. Product policy is therefore an exclusively federal responsibility.

The federal government is also responsible for some areas of taxation such as VAT, part of personal income tax, customs and excise duties, etc.; consumer protection as a whole including legal guarantees, product and service safety; patents and some aspects of energy policy such as pricing policy, management of major energy production, storage and transport infrastructures and security of supply.

Support for business innovation, some taxes, for example, vehicle taxation, agriculture, etc. are areas for which the regions are almost fully responsible.

Policy framework

Driving forces for material resource efficiency and circular economy

Federal

Belgium is currently strongly dependent on other countries for its raw material supply. This has created supply insecurity and price instability as raw material scarcity increases. The circular economy provides opportunities for Belgium to maintain and use materials longer, and thus be less dependent on third countries.

Belgium has long been active in the field of separate collection and recycling of waste. Thus, it continues to see the circular economy as an economic opportunity for existing, ever-changing industries including chemistry, building, logistics and reverse logistics.

The critical raw materials identified by the European Commission in 2017 play an important role within Belgian industry, not so much in the production of final products, but within refining, recycling and transformation. Several Belgian companies are very active in their sourcing and distribution.

Through innovation and research, the circular economy can bring about business opportunities and employment – in several areas such as repair, local activities and remanufacturing.

In order to assess the potential of the circular economy in Belgium, the Federal Minister for the Environment commissioned a study of four sectors in 2015: the chemical industry, the food industry, the machinery and equipment sectors and the automotive sector. Based on different scenarios the results of the study highlight that, in these four sectors, the circular economy would create EUR 293 million–1.2 billion of value added by 2030 and create 3,700–11,600 direct jobs in these same sectors by 2030.

Next to these economic incentives, there is strong environmental and climate awareness amongst consumers, government and civil society.

Economic potential of the circular economy in Belgium

Below, an extract of the executive summary of the study *Potential of circular economy in Belgium* (the whole study is only available in French) is presented.

*The **circular economy** is subject to an important attention due to the potential of economic development and growth that comes with it. Indeed, according to the experts and promoters of this new kind of activity, the transformation of our economy from a linear model [i.e. in which resources are exploited and consumed and are in fine transformed to waste] to a circular model which is more efficient in term of resources [i.e. which aims to maintain manufactured products, their components and the materials as long as possible within the system while ensuring the quality of their usage] **allows to realize some economies, to generate economic activity and employments, while preserving and reducing the environmental impact for the society.***

*From the economic theory's point of view, **two mechanisms** can explain the creation of added value and of employment through the circular economy. On the one hand, the circular economy can be a source of **cost reductions**, as is the case for the procurement of raw materials and other inputs linked to the production, but also for waste management, etc. On the other hand, the circular economy can **stimulate the development of new products, goods and services**, for example in the field of repair, recycling, economy of functionality, etc. In this dynamic, different sources have put forward some first estimations regarding the economic potential of circular economy. Among others, The MacArthur Foundation evaluates the economies potential worldwide at no less than \$1 billion per year! At European level, it would represent more than one million jobs that could be created by the circular economy.*

*In this context, the assets that Belgium can rely on – the quality of its workforce, its technical expertise, its capacity to innovate, its central position in Europe, etc. – should allow it to fully participate to the movement, and to create economic activity and jobs in the scope of this new paradigm that is the circular economy. The present study brings a **quantitative insight** about this matter and considers **three scenarios** for the development of circular economy, the first one (S0) considering a constant evolution in the continuity of the existing circular economy without the undertaking of any particular specific initiatives or initiatives complementary to existing ones in order to enhance its development (Business as usual), the second (S1) taking into consideration some – moderate - initiatives to enhance the development of circular economy, the third (S2) taking into consideration voluntarist initiatives destined to enhance the development of circular economy : Measures inserted in the roadmaps, action plans,... in the regions, at the federal level, in the neighbouring countries and at European Union level.*

*The evaluation focuses initially on **four sectors**: the **chemical industry**, the **food industry**, the **machinery and equipment industry** and the **automobile industry**. Only in these four sectors, the circular economy would allow to create between **EUR 293 million and EUR 1.2 billion of added value at the horizon of 2030**. In addition, the circular economy could create – based on these scenarios - between 3,692 and 11,634 direct jobs in those same sectors.*

*The results obtained for these four sectors **extrapolated to the whole economy** presage a **total economic potential for Belgium which lays between EUR 1 and EUR 7 billion of value added at the horizon of 2030**, whether we consider the scenario S0 or S2, respectively, and, according to the same scenarios, **between 15,000 and around 100,000 jobs at the horizon of 2030**.*

*The obtained results should be **interpreted with caution**, due to, on the one hand, the methodological limits that are inherent to any mid-long term prospective exercise on an economic domain which is booming and structuring itself, but also and foremost, on the other hand, due to the **level of uncertainty that prevails at the moment on technological, cultural, and sociological developments, but also on regulatory and support measures that will be enforced by the governments** and that will influence the extent of the*

development of a circular economy. However, the analysis shows that circular economy can have a significant impact on the wealth creation (value added) and on the job creation in a region or a country.

Flanders

In Flanders, several needs and motives have driven action for a circular economy.

The political awareness that **end-of-pipe waste policies** were clearly limited in generating impacts on sustainable resource management and closing loops was the main trigger to start working towards more fundamental interventions. Flanders also wants to maintain and reinforce its position as a frontrunner in terms of resource efficiency and the circular economy in Europe.

Besides this, Flanders is a very **material and resource intensive** region. For material intensity in Flanders, a model¹ has been developed that also allows the assessment of the material dependency of the Flemish economy as a whole, by economic sector, or by consumption domain.

Flanders is **highly dependent on the import** of resources from other, possibly politically unstable, countries and regions at a time when natural resources are becoming increasingly scarce and mining and using them is limited by planetary boundaries, while demand is rising as the world population grows and income gaps in regions such as China and India narrow.

Furthermore, **economic** arguments have been promoted by stakeholders in Flanders. The circular economy has the potential to create jobs and stimulate growth, for example by encouraging local production, remanufacturing, repair and maintenance activities. It also creates jobs at all education levels, therefore stimulating societal coherence. This is combined with industry's need for a market for secondary raw materials, and the need to promote the market for recycled or reused materials, for example by including them in (public) procurement.

From a purely economic point of view, the advantages of the circular economy speak volumes. If resource use across the entire value chain were made more efficient, the need for materials in Europe could be reduced by an estimated 17–24 per cent by 2030². The European business world could save EUR 630 billion annually by using resources better³. By getting rid of the materials costs and creating new products, services and value can grow the EU's gross domestic product (GDP) by 3.9 per cent. This means that the circular economy could create 1.2–3 million extra jobs by 2030. Indicative estimates of the economic benefits of the circular economy for Flanders points to a savings in material costs of 2–3.5 per cent of the Flemish GDP and the creation of 27,000 additional jobs, ranging from high-tech to lower-skilled ones⁴.

Studies carried out in Flanders also show evidence underpinning the argument that the circular economy is a crucial strategy towards developing a **low carbon economy**. This link is getting more and more obvious and could become an increasing political push for circular economy measures.

Additionally, we have encountered specific **legislative barriers** which hinder the transition towards a circular economy, making action necessary:

¹ <http://www.ovam.be/sites/default/files/Uitbreiding%20van%20en%20berekeningen%20met%20het%20IO-model.pdf> (Dutch)

² McKinsey (2012), Mobilizing for a resource revolution. <http://bit.ly/2hwwvqf> (English).

³ European Commission (2014), Towards a circular economy: A zero waste programme for Europe, Communication from the European Commission. <http://bit.ly/WOptj5> (English).

⁴ SuMMA (2014), Verkennende analyse van het economisch belang van afvalbeheer, recyclage en de circulaire economie voor Vlaanderen (Exploratory analysis of the economic importance of waste management, recycling, and the circular economy for Flanders). [https://www.vlaanderen-circulair.be/src/Frontend/Files/userfiles/files/summa_economisch_belang_8%20\(1\).pdf](https://www.vlaanderen-circulair.be/src/Frontend/Files/userfiles/files/summa_economisch_belang_8%20(1).pdf) (Dutch).

- contradictions between legislation (and subsidies) for energy reduction and material aspects, for example insulation that hinders recycling after use;
- existing legislation that leads to an ongoing focus on virgin raw materials due to the lack of pricing of externalities (external costs are not included in the cost of virgin materials, for example in public tenders in which the price is a dominant assessment criterion);
- legislation that makes waste generation preferable to industrial symbiosis, internal loops or resource efficient solutions, for example product specifications that exclude the use of recycled content;
- extended producer responsibility (EPR) that is being avoided by web retailers so the cost has to be paid by the Belgian consumers.

In the specific context of a federal country such as Belgium, legislative obstacles also stem from the fact that competences that are relevant to the circular economy are spread over different policy levels. As a result, OVAM took the initiative in 2018 to set up a national platform for the circular economy, through which the top levels of federal and regional environment departments, economy/innovation departments and finance departments meet twice a year to decide on common action in priority policy fields. Currently the focus is on the link between product policy, the registration, evaluation, authorisation and restriction of chemicals (REACH) and waste policy, traceability, end-of-waste criteria, financial policy and indicators

Wallonia

As is the case throughout the European Union (EU), scarcity of resources, concerns over environmental degradation and the need to protect public health and support job creation are the original drivers of resource efficiency, circular economy and raw materials policies in Wallonia.

The legacy of Wallonia's industrial past, including the overexploitation of geological resources and the contamination of soils, particularly heavy road traffic resulting from its central geographical position in Europe, and high population density are the key factors that have contributed to the definition and orientation of different resource efficiency and circular economy policies.

Resource efficiency and circular economy are clearly one of the major political priorities in Wallonia, as reflected in the **Regional Policy Statement of 25 July 2017** (La Wallonie plus forte), and is part of several policy initiatives, including the **Marshall Plan 4.0**; the **2nd Employment-Environment Alliance in the area of sustainable construction**; the **2nd Walloon Sustainable Development Strategy**; the recent **Walloon Waste-Resources Plan**, adopted by the Walloon government on 22 March 2018, and development of the **NEXT programme** focusing on the effective management of resources across all sectors.

With its **Marshall Plan 4.0**, a new economic restructuring programme, the Walloon government intends to use the circular economy as a powerful impulse for economic development. The final objective of the strategy is to support the sustainable use and complete valorisation of the resources used in Wallonia by Walloon companies throughout their life cycle.

Dedicated national strategies or roadmaps for material resource efficiency and a circular economy

Federal

In the Belgian institutional context (see note at the beginning on roles and responsibilities in Belgium), each of the three regions and the Federal Government have adopted action plans and/or roadmaps focusing on the circular economy. These action plans and roadmaps also indirectly address resource efficiency.

At the federal level, a roadmap with some 21 measures was published in October 2016. It is backed jointly by the environment and economy ministers⁵.

The strategic goal of the Federal roadmap is to increase the use rate of products, (biotic and abiotic) components and materials, thereby reducing the need for new materials by:

- **increasing the recovery rate of products' components and materials** through the implementation of functional-economy projects⁶;
- raising **consumer awareness**;
- making products more robust, by **repairing and reusing** them, in order to extend their useful lives;
- making products more **adaptable and modular** at the earliest stage of their design;
- promoting the **substitution of hazardous chemicals** in products by health- and environmentally friendly alternatives, including non-chemical alternatives;
- **recycling and reusing components** as separate by-products or spare parts;
- promoting **reuse of raw or secondary materials** and of **renewable raw materials**, if more appropriate, when developing new products.

The actions set out in the Federal Belgian roadmap focus on these objectives. They mainly concentrate on the federal competences related to product policy and consumer protection.

Flanders

In 2011 OVAM founded **the Flanders' Materials Programme (FMP)** with the purpose of providing the region with a future-proof economy where materials cycles are closed. The programme is an example of successful co-creation and co-ownership between business sectors, research institutions, government and environmental organisations. In order to develop the foundations of a circular economy by 2020, the FMP focused on closing materials cycles among economic clusters and providing enabling functions.

Four sectoral economic clusters were chosen for their potential for improvement from a primary resources and materials perspective and for the expertise available in Flanders:

1. sustainable materials' management in construction;
2. the bio-economy;
3. sustainable chemistry and plastics;
4. critical metals in a continuous cycle.

Five cross cutting enablers were chosen to break down obstacles encountered by many of the projects, business cases and innovation in the different sectors.

1. **Sustainable design**: how can products, services and systems be designed in such a way that they simultaneously bring economic, social and environmental added value? How can design for repair, disassembly and recycling be established in industry?
2. **Smart collaboration**: how can actors in the value chain – raw material suppliers, designers, producers, distributors, consumers and the waste sector – close material loops by working together in innovative ways? As the citizen is crucial to realising the circular economy, the FMP also worked on education and sensitisation.
3. **Smart investment**: how can the government, the financial sector and businesses invest in sustainable materials management by providing subsidies or loans for innovation, and green public or private procurement with a focus on materials? How can economic instruments be used to advance the circular economy?

⁵ <http://www.marghem.be/wp-content/uploads/ECON-CIRC-FR-LIGHT-2.pdf> (French)

<http://www.marghem.be/wp-content/uploads/CIRC-ECON-NL-LIGHT-2.pdf> (Dutch)

⁶ Economic model that encourages the use of a product-based service instead of the use of product itself.

4. **New materials and new material technologies:** how can new materials (for example, nanomaterials and composites) and new production and recycling technologies contribute to lowering consumption of materials and to a better closing of material loops?
5. **Better regulation:** how can regulations be further optimised to stimulate the maximum use of waste as a resource and at the same time protect the environment and public health?

When founded in 2011, the Flanders Materials Programme was built on three pillars.

1. **A long-term vision: Plan C** was the circular economy hub in Flanders, created by OVAM to encourage a change in mindset from waste to resources and to accelerate the move towards a circular economy and pursue catalytic impacts. Central to the whole agenda is reaching out to a small number of pioneering small and medium-sized enterprises (SMEs) to encourage innovation in product design, business models and collaborative approaches across and between value chains. Restricting interventions to a small number of companies was initially dictated by budget limitations. However, Plan C then embraced its role as an activating body that catalyses change by connecting and challenging the most innovative companies and enabling them to lead others, rather than trying to directly influence the large number of SMEs in Flanders. Its three core activities are: shaping a vision; activating a self-learning network around sustainable materials' management within a circular economy; and supporting transition experiments.
2. **Policy-relevant scientific research:** The Policy Research Centre for Sustainable Materials Management (SuMMA)⁷ brought together a broad spectrum of researchers and investigated what economic, policy and social conditions need to be fulfilled to effect a transition towards the circular economy. One of the leverage projects is developing the job potential of the circular economy by adapting education to provide the required knowledge and skills for new and different jobs related to circular economy opportunities.
3. **Action and projects in the field:** Agenda 2020 is a list of 45 concrete projects with dedicated partners and clear time schedules that shows what concrete steps are needed to realise the 2020 ambition. For each cluster and enabler priority action was identified. Successful **cooperation** between stakeholders, based on **shared responsibility** for and **co-creation** of projects, was the keystone of the programme's approach to implementing its vision and overcoming barriers. Of the 45 Agenda 2020 projects, 10 were run by OVAM, which focused on encouraging action in larger organisations, 20 by industry associations such as the Federation of Environmental Companies (Go4Circle), the Flemish Construction Federation (Vlaamse Confederatie Bouw), the Federation for Chemistry and Life Science Industries (Essenscia Flanders) and the Federation for the Technology Industry (Agoria), and 15 by other organisations, including the Department of Economy, Science and Innovation, the Flemish Institute for Technological Research (VITO) and the Federation for a Better Environment (Bond Beter Leefmilieu).

The activities of FMP and its concrete projects carried out in 2012–2015 can be seen as the first step in the transition to a circular economy in Flanders. In the beginning of 2016, OVAM received the **Circulars Award** for the work done together with the stakeholders in the FMP. According to the jury, great merit not only lies in the **innovative partnership** between the government, the business world, research institutions and civil society, but also in the comprehensive **cross-cutting programme** which creates the right mindset to make the transition to a circular economy.

The functioning and the results of the FMP were evaluated in 2015 through a stakeholder consultation. (More information on this process can be found under paragraph 'Approaches to resource efficiency and circular economy policy evaluation'). The evaluation resulted in lessons learnt that in 2016 triggered a new approach to the transition to a circular economy, with higher ambitions.

⁷ <https://steunpuntsumma.be> (English)

In the spring 2016 the Flemish government adopted the cross-cutting policy paper **Vision 2050, a long-term strategy for Flanders**. This represents a commitment to a clear vision for the future, for the Flanders it wants to be in 2050: a social, open, resilient and international region that creates prosperity and well-being in smart, innovative and sustainable ways, and where every individual counts. To attain that future, seven transition priorities were outlined that cut across policy areas and engage partners throughout business and society. **Continuing the structural transition towards the circular economy** is one of those seven transition priorities, building on the following lessons learnt from the Flanders' Materials Programme:

- From 2012 to 2015 the Flanders Materials Programme focused mainly on closing materials loops, as a way of dealing with the circular economy. This narrow approach was opened up to a much wider range of resources and value chains, including water, energy, land and food. A competitive bio-economy in which biomass is sustainably produced and residual flows are (re)used in food, feed, materials, products and energy, is also explicitly mentioned in Flanders' vision for 2050. As result the range of stakeholders was also extended with partners from, amongst others the food sector, local authorities and consumers. Topics such as finance, taxation and education are included in the rolling work programme of Circular Flanders. Circular Flanders is also cooperating with such actors as federal administrations, the financial sector and educational institutions on concrete action.
- While only the Minister of Environment was accountable for the Flanders Materials Programme, the transition priority 'circular economy' is now a joint responsibility of the Flemish ministers for environment; the economy; employment and innovation, to emphasise that circular economy is a cross-cutting challenge.
- While the Flemish Materials Programme had a strong focus on some key sectors, the emphasis is now more on collaboration across sectors and industries, and with a wide range of stakeholders on strategic transversal themes;
- The three pillars of the Flanders Materials Programme (Plan C, SuMMa and Agenda 2020) have been merged and integrated in one new programme, **Circular Flanders** and embedded in the Public Waste Agency of Flanders (OVAM).

The **Circular Flanders** programme was launched in 2017, with a Strategic Plan for 2016-2020 and a Kick off Statement/Operational plan for 2017 and 2018.⁸

Circular Flanders plays a vital role in the circular economy in Flanders and acts as a hub, an inspirer and matchmaker. It is a partnership of public authorities, companies, civil-society and research institutions which works to advance the circular economy in Flanders. The scope of its ambition is broadened to reach out to a significant number of stakeholders who were previously not or insufficiently involved, such as local authorities, federation of food sector, consumer organisations and trade unions.

Circular Flanders combines a demand-driven approach with a more proactive supply-driven approach. In both, Circular Flanders carries out **six key activities**, with objectives that are rather action oriented (and not quantified).

1. **Network:** building partnerships, co-creation and shared ownership. Cooperation and shared commitments from the partners involved in Circular Flanders, both public and private organisations, is crucial to create a circular economy.
2. **Laboratory:** giving tailor-made support to pioneers and pragmatic doers. Using challenges (collective trajectories to encourage entrepreneurs to go that extra mile with their ideas), sectoral learning programmes and demonstration projects, Circular Flanders tries to reduce the risk of experimentation (de-risking) and encourage tests in the circular economy.
3. **Knowledge:** knowledge sharing and policy-relevant research projects. The Policy Research Centre for the Circular Economy (CE Centre), a consortium of scientists, is carrying out research into

⁸ STARTNOTE <https://www.vlaanderen.be/nl/vlaamse-regering/circulaire-economie#publicaties> (Dutch)
Flanders Circular <https://vlaanderen-circulair.be/en> (English)

various aspects of the circular economy. Circular Flanders asks targeted, policy-relevant research questions and shares the acquired knowledge.

4. **Policy:** directional and supporting policy, coordination between administrations. Circular Flanders focuses on aligning and connecting with the various policy agendas that are relevant for the circular economy at local, Flemish, federal, and European/international levels. It is the point of contact for these authorities within the Flemish circular economy. Circular Flanders also supports directional and supporting policy in line with the principles of the circular economy. The main goal is to overcome existing barriers to circularity and improve the framework conditions for a circular economy in Flanders.
5. **Innovation:** stimulating and accelerating innovation and entrepreneurship in the circular economy by the use of appropriate instruments. Circular Flanders encourages and speeds up innovation and entrepreneurship towards the circular economy using targeted tools. Innovation is considered to be a broad concept: from technological innovation, innovative product design, revenue models, process innovation, and systems of requirements to new forms of collaboration.
6. **Embedding:** up-scaling and embedding of circular economy principles and good practices. Circular Flanders ensures that the principals and best practices of the circular economy are utilised and embedded within the Flemish companies, civil society organisations, education, local administrations, and citizens. Citizens and companies are encouraged to accept their own responsibility within the circular economy. Good examples of citizen initiatives could be inspirational here.

The **demand-driven approach** responds to questions and needs of different stakeholders by carrying out the key activities mentioned above. The initiative clearly lies with the stakeholders.

The **supply-driven approach** is more proactive, using a rolling work programme consisting of a limited number of cross-cutting themes. For the period 2017–2018 the work programme consists of **three strategic themes**: circular procurement, circular cities and circular businesses.

1. Circular procurement

Circular purchasing is the purchasing of products or services that are created and offered according to the principles of the circular economy, and which are processed further after their use according to these same principles. Governments, companies and other organisations can boost the development of circular products and services and the demand for these products and services through their purchasing policy. Circular purchasing is therefore a major driving force in achieving a circular economy. The economic importance of public procurements alone is already enormous: it accounts for approximately 17 per cent of the Belgian GDP⁹ and an average of 15 per cent for the whole Eurozone.¹⁰

2. Circular cities

Cities attract a lot of people and offer opportunities within a compact area. They have a major impact on the environment and their importance will only increase in the future. Cities have a lot of benefits as the experimental foundation for the circular economy. On the one hand, there is the city of bricks, asphalt, and some green space: the physical city. The city is compact, and therefore makes a perfect laboratory for experimenting with the (re)use of space or buildings, or for carrying out pilot projects on energy, water, logistics, or food flows. On the other hand, there is the city of working, living and experiencing: the city as the social-economic fabric, bringing a wide variety of people together. It is therefore the perfect laboratory for bottom-up citizen initiatives, creativity, and innovation for the circular economy.

⁹ Source: Federale Overheidsdienst Personeel en Organisatie (2014), Persdossier: Elektronische overheidsopdrachten: het leven van de ondernemingen en administraties vereenvoudigen. <http://bit.ly/2rTHE2O> (Dutch)

¹⁰ Source: European Commission (2015), International public procurement: from scant facts to hard data. <http://bit.ly/2rKl6Gb> (English)

In the medium term, Circular Flanders wants to embed the circular economy in the minds and action of urban administrators, citizens and entrepreneurs. We want to provide Flemish cities with a connective story in which they can each make their own mark and give wings to the circular initiatives of civil society and citizens. By supporting them, connecting them and giving them visibility.

3. Circular businesses

It is no simple task to completely close a loop within a single company. Usually, the circular economy requires new collaboration between companies. These are often surprising, run through the entire value chain and cross sectoral boundaries. On the one hand, companies must consult with their suppliers of parts and resources to be able to use, for example, recycled, recyclable, reusable or bio-based materials. On the other hand, they must make agreements with middlemen or shop chains to organise, for instance, repairs, rentals, upgrades or returns. In addition, there is a need to develop or apply new technologies. for example, sensors that can monitor the condition, use and location of a leased device. Or new materials or processes that can replace substances that come from non-renewable sources.

The potential economic, societal, and ecological benefits of a well thought-out and successful circular business model are worth more than the investment. But to make investment possible, a supporting framework, knowledge and skills are required. Circular Flanders wants to help create a favourable climate for this. To ensure that circular strategies are accepted by entrepreneurs, Circular Flanders focuses on:

- all phases of the innovation funnel: from raising awareness and generating ideas, through innovation and implementation, to the launch and valorisation;
- innovation in the following: core and assistive technology, revenue models, product design and collaboration models.

In the medium term, the goal is to bring the circular economy right out on the company floor in a significant portion of Flemish businesses.

Wallonia

Wallonia does not have a dedicated resource efficiency strategy. This topic, though, is integrated throughout different plans and current policies which are outlined under other parts of this country profile (see Policies which include elements of material resource efficiency, circular economy and raw material supply).

Brussels

In 2016 the Brussels Region developed its own transition programme towards a circular economy. This 4-year programme called Be circular aims to offer a holistic vision of circularity together with a practical interpretation through an initial series of levers at its disposal. It involves different ministerial departments and a diversity of private, public and community-based regional and municipal stakeholders in order to meet a range of cross-functional challenges and carry out increasingly sector-based actions.

Be Circular pushes forward three main objectives :

- Transforming environmental objectives into economic opportunities;
- Anchoring economic activities within Brussels boundaries, in order to maximize resources circularity while boosting entrepreneurship;
- Creating new employment opportunities.

In its design, the programme seeks to complement the existing environmental policy plans from the Brussels region with an economic dimension layer. It is configured to be an economic activation

programme that will convert the objectives that are set in all these environmental policy plans into Economic and job creation opportunities.

The Be Circular's strategic directions are to:

- developing innovative business models to achieve optimal management of the extended lifespan and sharing of consumer products;
- improve waste prevention, protective collection, the re-use of products and preparation for recycling of the main materials consumed in Brussels;
- create complete value chains possible at local level in line with Brussels environmental policies;
- apply industrial ecology principles to optimise business flow management;
- boost technological and organisational innovation;
- improve employment and the competitiveness and resilience of the businesses located within the Brussels Region.

The programme itself consists in an action plan of 111 measures covering transversal, governance, territorial and sectorial topics for delivering circular patterns at regional level. It focuses on five key economic sectors: retail, logistics, waste and resources, food, construction, and the built environment.

Some of these actions include :

- 50 new retail businesses supported in developing circular economy practices;
- 200 start-ups and businesses supported in implementing circular economy approaches;
- 2000 economic operators informed about the circular economy through training/events and 20,000 through digital information
- EUR 1.5 million/year of subsidies for innovative pilot projects;
- EUR 26 million in aid to economic expansion reassigned to better stimulate a circular economy;
- Loans, equity participation and securities economically viable models for a circular economy;
- Assessment of future circular economy professions and training
- Apply circular economy principles in 10 priority development sites

In terms of governance and stakeholder engagement an inclusive approach has been thought in order to impulse a strong sense of ownership. Four agencies and three ministerial departments are involved at a strategic coordination level of the programme. At implementation level a core team of 15 coordinators has been designated across different regional administrations. Alongside the core team, close to 200 people from over 90 different public, private and non-profit organisations representing multiple sectors also take part to the Be Circular programme. These participants act as thematic coordinators, leaders, partners, and experts in particular areas.

Overview of dedicated national or sectoral strategies for raw materials

Flanders

In 2003, Flanders adopted a **Parliament Act on surface mineral resources**. This act defines the basic objective of the policy on the management of Flemish (primary) surface mineral resources as, 'to sustainably supply the surface mineral resources that are necessary to meet the current and future social need for materials'.

This basic objective is further put into practice by:

- extracting in such a way as to allow the economic, social and environmental components to mutually reinforce each other to the maximum extent;
- offering development perspectives for the sector, taking account of business economic security and long-term socio-economically acceptable extraction opportunities, in order to meet society's needs; Flemish primary raw materials and alternatives are seen in that context as complementary, not as opposites;

- promoting the use of fully-fledged alternatives for primary surface mineral resources. The objectives of the sustainable materials management – referred to in Article 4, § 3 of the Decree of 23 December 2011 on the sustainable management of material cycles and waste – are particularly taken into account. Data from the Monitoring System for a Sustainable Surface Mineral Resources Policy show that there are not enough Flemish raw materials (the sum of primary raw materials and alternatives) to meet the demand – a significant portion of raw materials has to be imported. The goal is that the fully-fledged alternatives that are available and are used;
- using surface mineral resources in an economical and efficient manner;
- optimal extraction on the basis of an economical use of space;
- taking the preservation and development of nature and the natural environment into account in extraction.

The surface mineral resources that are extracted in Flanders are clay, loam, gravel and different types of sand, including pure silica sands. Companies are required by law to provide annual information on each extraction site– plans, extracted volumes, etc. – to the Flemish Department of Environment and Spatial Planning (OMG).

Data on current demand, imports and exports of virgin and secondary materials are collected under the Monitoring System for a Sustainable Surface Mineral Resources Policy, a partnership between OMG, OVAM and VITO. Producers, traders and consumers of mineral resources and alternatives (secondary materials) are asked every two years about:

- the use of primary surface minerals and alternative materials –granulates from construction and demolition waste, slags, ashes, etc.;
- import and export flows;
- where primary surface minerals and alternative materials are used.

Projections of future demands are calculated as part of the General Surface Mineral Resources Plan (AOD) that is drafted every five years by OMG. All data collected are interpreted and a conclusion is drawn about whether new areas for extraction are necessary (separately for each mineral resource). If the answer is yes, there is a legal procedure available that can be followed for concrete cases. The AOD does not identify specific areas.

Wallonia

Wallonia does not have a dedicated strategy for raw materials.

Policies which include elements of material resource efficiency

Federal

As mentioned previously, Belgium’s federal ministers responsible for the environment and the economy jointly presented their roadmap for the circular economy, Together, let’s spur the economy by developing the circular economy in Belgium, at the end of 2016. It includes 21 measures in support of regional action and focuses mainly on product design as well as consumer protection.

Since then, various projects and studies have been finalised by the Federal Ministry of the Environment or are still in progress in order to contribute to the development of product design for a better use of resources. They also contribute, in part, to the work currently being carried out by the European Committee for Standardisation on this topic, which will serve as a basis for future revisions of the various product categories covered by the European Commission’s Ecodesign Directive.

- A study is being finalised to support the development of innovative business models through intelligent product design, for longevity and component recovery. It includes a successful case study on a transition project on lighting with the Belgian company ETAP. A report will be available shortly.

- The first draft criteria that a product would have to meet to use recycled plastic were defined in 2016. These proposed criteria need to be further refined and supplemented, in particular to take this aspect into account in public procurement. We are awaiting the finalisation of the standardisation work done at European level by the last quarter of 2019 to continue work on recycled content in products.
- A study aiming to develop recommendations to extend product life was conducted in 2017. It presents various ideas for action that will be discussed within a platform bringing together the administrations involved and stakeholders. This platform is managed by the Belgian Federal Public Service of Economy. One of the areas of discussion is, for example, how to improve the reparability of products, in particular by promoting the availability of spare parts.
- A study to define reparability criteria was finalised in June 2018. It includes two practical cases – dishwashers with Bosch/Siemens and vacuum cleaners with Philips. The study is co-financed by the Benelux partners¹¹.
- A strategic examination of different material flows in recycling centres started at the end of 2017. Its objective is to identify designs that prevent proper product recycling. On that basis we will discuss possible improvements with producers and distributors (for their own brand products). The first flows analysed were packaging made of plastic or metal and drink cartons (PMD) and waste electrical and electronic equipment (WEEE).
- A study on plastic decontamination techniques to support healthy recycling is under way.

The Federal Institute for Sustainable Development is also actively working on integrating the circular economy principles into public procurement. There are many collaborations with regional authorities, with a view to integrating recycled plastic content into market evaluation criteria, and with European and international authorities to move authorities' requests towards the provision of more circular economy-friendly services.

Last but not least, the Federal Ministry of Economy has recently implemented the following measures:

- *Frame the programmed obsolescence of products by creating a reporting point on planned obsolescence*¹²:
 - July 2016: creation of a reporting point allowing the consumer to report concrete cases of planned obsolescence.
- *Manage the obsolescence of products through the development of policy recommendations to combat planned obsolescence*:
 - May 2017: publication of the study *Planned obsolescence: Belgian consumer protection policies and measures*¹³, led by the Federal Public Service of Economy and entrusted to the RDC Environment consultancy.
The study presents packages of policy proposals that aim to protect consumers against unfair or deceptive commercial practices and extend the life of products, for example, to promote reparability and extend product warranties. These measures may be adopted at European and Belgian levels (regional and federal).
 - November 2017: launch of a product lifecycle platform bringing together representatives of producers, traders and consumers to define the types of products that should be primarily affected by these measures.
 - December 2018: the report of the platform is expected.
- *Protecting the consumer through better safeguards enforcement*:
 - May 2017: one of the measures proposed in the above study is to extend the period of presumption of non-compliance in legal warranties.

¹¹ http://www.benelux.int/files/7915/2896/0920/FINAL_Report_Benelux.pdf (English)

¹² <https://pointdecontact.belgique.be/meldpunt/en/welcome> (English)

¹³ <https://economie.fgov.be/fr/publications/lobsolescence-programmee> (French)

- 2017–2018: the measure is studied within the product lifecycle platform.
- The follow-up will be decided by the Minister of Economy Kris Peeters in consultation with the government.
- *Support and inform companies by setting up a sustainable economy Knowledge Centre at the federal level:*
The mission of the Centre is to inform businesses and citizens and help them become more actively involved in economic strategies that contribute to the sustainable development of the goods and services market. The Centre also houses the REACH helpdesk and related dossiers, such as green or sustainable chemistry.
 - October 2016: creation of the Knowledge Centre.
 - 2017–2018: Hiring process. the Centre's staff will have tripled by 2019 relative to 2016.
 - June 2017: national conference on the modes of financing the circular economy organised by the Centre¹⁴.
 - November 2018: conference on sustainable substitution of substances of very high concern (SVHCs).
- *Evaluate performance by developing circular economy indicators:*
 - February 2018: launch of a circular economy platform involving both federal and regional levels.
 - 2018 Q2 or Q3: launch of a working group led by the Federal Public Service for Economy to study circular economy indicators at Belgian and European levels.

Flanders

Several other policies in Flanders cover aspects of the circular economy. The selection below has been made based on the fact that these policies currently show most synergies.

Buildings

The Flemish **Material conscious building in a circular way**, 2014-2020 policy plan links to circular economy policies in Flanders. The general goal of the plan is to increase material-conscious building in Flanders by 2020. To this end, five objectives have been identified:

- minimise the use of virgin materials;
- the use of materials at the right place, with reversible connections;
- the avoidance and reduction of dangerous substances;
- low footprint design;
- modular/adaptable/transformable buildings.

This is translated into five action fields:

- 1) selective demolition (including permitting and monitoring);
- 2) a focus on stone fractions;
- 3) a focus on non-stone fractions;
- 4) the material performance of a building, including Totem¹⁵, a Belgian tool for architects and builders to calculate the material performance; and
- 5) dynamic reversible building as a principle¹⁶.

The main objective of the TOTEM tool is to calculate the life-cycle environmental impact of building elements and buildings both at the level of individual environmental impact categories and at an

¹⁴ <https://economie.fgov.be/fr/evenements/seminaire-financement-de> (French)

¹⁵ <https://www.totem-building.be> (English)

¹⁶ <http://www.ovam.be/studie-veranderingsgericht-bouwen-0> (Dutch)

https://www.researchgate.net/publication/320909231_Flanders%27_and_Brussels%27_emerging_businesses_and_products_for_a_circular_construction_economy (English).

aggregated level (environmental cost). This allows for a better understanding of the environmental performance of materials used in building elements or buildings.

Implementation plan on household waste and comparable industrial waste

With the implementation plan for household waste and comparable industrial waste, Flanders wants to drastically reduce the total quantity of residual waste from households, companies and organisations in the 2016–2022 period. It will do this by imposing various targets for residual waste from each cluster of municipalities. The implementation plan imposes new targets for waste prevention, re-use, litter, illegal dumping and industrial waste in Flanders. (More information on the targets of this plan can be found under paragraph ‘Targets for resource efficiency and circular economy’)

Bio-waste

The Flemish Action Plan for the Sustainable Management of (Residual) Biomass Streams 2015–2020 aims to further stimulate the prevention, separate collection and recycling of (residual) biomass waste streams with a view to cost, (raw) material and energy savings. The starting point of the programme is prevention of bio-waste; where waste does occur, optimal use is being sought through the cascading principle.

Agriculture/Food policy

The government of Flanders has:

- 1) established a working group on food losses, bringing together all relevant administrations;
- 2) set up a food supply platform: a dynamic platform for coordinated action on the prevention of food losses, leading to the signing of a declaration of commitment, Together against food losses, by the government of Flanders and its food supply chain partners;
- 3) the development of a Food Supply Chain Roadmap with the target of decreasing food losses by 15 per cent by 2020 throughout the chain; and
- 4) the organization of a Food Losses Forum in which experience can be exchanged.

As result of this declaration the government of Flanders and all the actors in the food chain developed the Roadmap on Food Losses (2015–2020)¹⁷, which describes a large number of actions. Each year a report is presented to the government. A platform on food losses with representatives of the whole food chain (Ketenplatform Voedselverlies) follows the implementation of action. Food losses in Flanders are calculated and monitored.

Additionally, two concrete outcomes might provide extra information:

- Cosmetic standards¹⁸;
- Food loss and packaging¹⁹.

Information on the Road map can be found at <http://www.voedselverlies.be/en> (English).

Wallonia

Wallonia has integrated resource efficiency and circular economy issues throughout different plans and policies. These include:

- The **Regional Policy Statement of 25 July 2017** (La Wallonie plus forte) clearly supports a circular and resource-efficient economy: *‘Circular economy will be an important axis of the economic and*

¹⁷ <http://www.voedselverlies.be/en#monitoring> (English)

¹⁸ <https://lv.vlaanderen.be/nl/voorlichting-info/publicaties-cijfers/studies/report-summaries/impact-cosmetic-quality-standards> (English)

¹⁹ <http://www.ovam.be/sites/default/files/atoms/files/2015-Report-OVAM-Food-loss-and-packaging-DEF.pdf> (English).

*environmental policies. Their implementation tools will be coordinated and streamlined. The issue of how effectively combat the planned obsolescence of consumer goods will be investigated*²⁰.

- Through the **Marshall Plan 4.0** (the Walloon government Regional Development Plan for 2015–2019), the Walloon government intends to deploy an integrated strategy of regional development by activating various competitiveness levers. In particular, this involves developing a favourable framework and measures to support investment and the development of economic activity. The development of the circular economy and the efficient use of resources by industry are among its priorities.
- Renewal of the **Regional Innovation Strategy** (RDI) is an essential element of the Marshall Plan 4.0²¹. In this context, the orientation set by the Walloon government in its **Smart Specialisation Strategy (S3)** has been implemented and described in the different tools supporting the RDI. It is a question of targeting regional efforts on the main axes of development identified for the Region, in connection with the regional policy of clustering – competitiveness clusters are indeed set up for sectors identified as strategic for the Region. Particular emphasis is placed on commercialisation, technology transfer, non-technological innovation, the circular economy, the creative economy, and the deployment of information and communication technology (ICT). As the S3 is conceived as an evolutionary process, its implementation will be continued and improved. In particular, since Wallonia was selected in December 2017 as a pilot region for industrial transition by the European Commission (EC), it will receive specific support in 2018 to support its industrial transformation based on its Smart Specialisation Strategy.
- The **2nd Walloon Sustainable Development Strategy** (2nd WSDS)²² was adopted in July 2016. The Decree on the Walloon Sustainable Development Strategy (27 June 2013) foresees the adoption of a new strategy by each new legislature. This Strategy therefore follows the 1st Strategy adopted in October 2013. The Strategy is designed as ‘*a guidance and action document to promote initiative and consistency in the public policies of the Walloon Region for sustainable development*,’ (art. 2, 2° of the Decree). The Action Plan includes three priorities: food, energy and resources.

The 2nd WSDS aims at better meeting the needs of the present generation without compromising the prospects of future generations. It therefore focuses on the change in consumption and production patterns needed to make Wallonia more resilient, create local jobs, reduce negative impacts on the environment and better generate shared prosperity. This change is in particular addressed in three priority areas: food, energy and resources. Actions in the area of resources aim to increase resource efficiency and to promote the circular economy through the promotion of recuperation structures, modification of legislation on waste management and definitions, awareness-raising, etc. The Strategy is fully in line with the 2015 United Nations 2030 Agenda for Sustainable Development.

- The new Walloon waste plan, adopted on 22 March 2018, is called the **Walloon Waste-Resources Plan** (Plan Wallon des Déchets-Ressources/PWD-R)²³ to highlight the need to take the new European orientation on the circular economy into account. The measures envisaged in the PWD-R have been developed and selected so that they contribute to the most efficient application of the principles of circular economy and the waste management hierarchy. The PWD-R includes six strands.

²⁰ <http://gouvernement.wallonie.be/files/Documents/DPR%202017-2019/DPR%20MR-CDH2017.pdf> (French)

²¹ <http://planmarshall.wallonie.be/> (French)

²² <http://developpementdurable.wallonie.be/la-strategie-wallonne-de-developpement-durable> (French)

https://www.unece.org/fileadmin/DAM/env/pp/ppdm/7th_PPDM/Presentations/WSDS2_Executive_summar_2016.pdf (English)

²³ <http://environnement.wallonie.be/dechetsressources/docs/WWRP-NTS-EN.pdf> (non-technical summary in English)

- Strand 1: the strategic framework of the Plan, which includes a programme of structural measures relating to data management (capture, use, traceability, simplification), issues of taxation, and the fight against environmental violations (inspections and penalties).
- Strand 2: the programme for prevention and the reuse of waste, which covers both industrial and household waste.
- Strand 3: the specific management plan for household waste.
- Strand 4: the specific management plan for industrial waste.
- Strand 5: the plan for public cleanliness and the fight against litter and fly tipping.
- Strand 6: surveys environmental and socio-economic impacts.

The PWD-R continues the action developed in previous plans, but with the stated objective of applying the principles of prevention and reuse, incorporating the experience of the circular economy into the selection and implementation of measures.

The Plan contains **157 measures of which 93 are closely linked to material resource efficiency and the development of a circular economy**, in particular the implementation of the concepts of by-products and end-of-waste status.

- The **NEXT Programme–Circular Economy Platform** is designed to promote industrial symbiosis and circular economy projects that minimise the loss of resources (energy, materials and water). The overall objective of the Programme is to support the sustainable competitiveness of companies through action involving awareness raising, specialist support, identification of potential synergies and mutualisation with economic potential.
- The Walloon government adopted the **Air-Climate-Energy Plan** in 2016. It contains 142 measures to reduce greenhouse gas emissions and other air pollutants, improve air quality and adapt to the impacts of climate change. Activities are focused on, amongst others, the agricultural, industrial, transport and residential sectors.
- In 2017, the Walloon government adopted its second **Action Plan for responsible (sustainable) public purchases**²⁴. It lasts from 2017-2019 with the objective to attain 100% of responsible public procurements by 2020. This means public procurements without social dumping, SME-friendly, fostering professional insertion, contributing to the fight against climate change and contributing to efficient resources management. One of the overarching strategic goals of this action plan is to encourage the efficient use of resources generally, using public procurements as leverage.

Beyond these overarching policies, a number of cross-cutting initiatives have been set up by the Walloon authorities, the competitiveness clusters and public-private partnerships over the past few years to foster eco-innovation and a more circular economy.

The Parliament of Wallonia has decided to draw up a report on the prospects for the circular economy in Wallonia. This parliamentary report is now finalised and was presented publicly in February 2019²⁵.

²⁴ http://developpementdurable.wallonie.be/sites/default/files/2017-10/plan_apr_complet.pdf (French)

²⁵ http://nautilus.parlement-wallon.be/Archives/2018_2019/RAPPORT/1301_1bis.pdf (French)

Institutional setup and stakeholder engagement

Please see the note in the beginning of the profile on division of roles and responsibilities in Belgium.

Federal

The circular economy policy at the Belgian federal level is backed jointly by the environment and economy ministries, and there is an intention to involve other federal ministers, such as the finance minister, who are empowered in some way to make relevant decisions.

Stakeholders are consulted on an ad hoc basis or in usual advisory bodies. The Federation of Enterprises in Belgium (FEB) also launched a platform on which all relevant Belgian players (federal and regional public authorities and stakeholders) are represented. The objective of this platform is, above all, to exchange information on each other's initiatives to ensure complementarity.

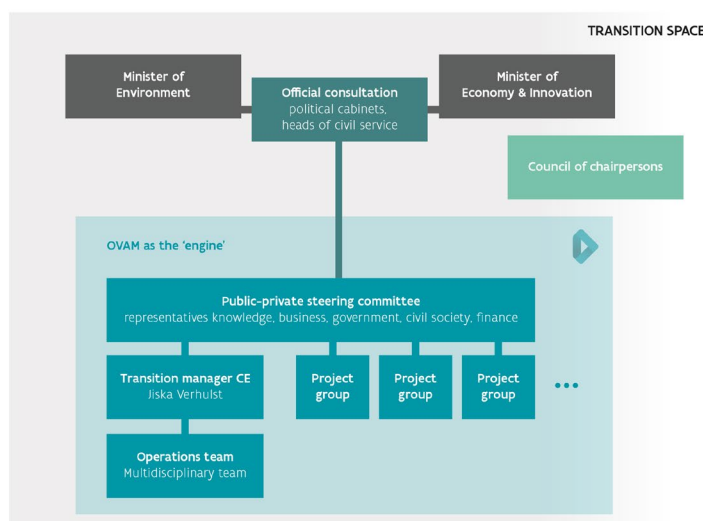
A Sustainable Knowledge Centre at the federal level has been set up. The mission of the Centre is to inform businesses and citizens and help them become more actively involved in economic strategies that contribute to the sustainable development of the goods and services market. The Centre also houses the REACH helpdesk and related dossiers, such as green or sustainable chemistry.

- October 2016: creation of the Knowledge Centre.
- 2017–2018: Hiring process. the Centre's staff will have tripled by 2019 relative to 2016.
- June 2017: national conference on the modes of financing the circular economy organised by the Centre.
- November 2018: conference on sustainable substitution of substances of very high concern (SVHCs).

Flanders

The governance model of Circular Flanders and the partners in the steering committee are presented in the figure below.

GOVERNANCE



The different roles are as follows.

- Two **ministers** are responsible for the transition to the circular economy in Flanders: the Minister of Environment and the Minister of Economy and Innovation. They meet approximately 3 times a year, without a formal structure.

- **The Council of Chairpersons** (leading civil servants from different ministerial departments) oversees the follow-up of the government-wide approach of transition management and the progress of the seven transitions in Flanders.
- The **public-private steering committee** is responsible for the strategic management of the circular economy transition priority. All partners from business, research, civil society, local authorities and government institutions provide support and contribute to the achievement of the shared goals.
- The **transition manager** manages the operational team of Circular Flanders on a day-to-day basis. The transition manager maintains contact with the other transition managers to make cross-fertilisation possible between the transitions.
- The **operational team** carries out the agreed strategy and the yearly work programme. This team is responsible for the daily operation of Circular Flanders. This operational team is the designated delivery unit for the circular economy transition priority. A range of stakeholders will pool human and financial resources in the unit, which will be headed by a public-private steering group. It will provide a single effective hub for the circular economy in Flanders.
- **OVAM** is the motor of the transition to the circular economy. The operational team of Circular Flanders is embedded in OVAM. OVAM provides human resources, accounting, infrastructure, housing, etc. **Project groups** are expert groups installed for a specific time and with a specific goal. A project group can be an existing consultation platform or can be initiated by the steering committee or the operational team.
- The **transition space** is a broad network of all partners and stakeholders who are involved in the circular economy in a broad sense (materials, water, spatial planning, food, energy). Contrary to the partners in the steering committee, no engagement is expected from these partners concerning the targets of Circular Flanders.

Members of the public-private steering committee

 OVAM Samen maken we morgen mooier	 AGENTSCHAP INNOVEREN & ONDERNEMEN	 AGORIA	 BOND BETER LEEFMILIEU Door de kracht van het milieu
 DEPARTEMENT ECONOMIE, WETENSCHAP & INNOVATIE	 DEPARTEMENT LEEFMILIEU, NATUUR & ENERGIE	 DEPARTEMENT RUIMTE VLAANDEREN	 essenscia
 FEVIA Vlaanderen Federatie Voedselindustrie	 GO4CIRCLE	 KU LEUVEN	 TRANSITIE Netwerk Middenveld
 UNIVERSITEIT GENT	 vito vision on technology	 Vlakwa Vlaams Kenniscentrum Water, Vlaamse Kennislogische Centrum Water	 Vlaamse Confederatie Bouw Bouw, energie & milieu

In 2015 SuMMa undertook a survey, engaging all Flanders' Materials Programme (FMP) partners in individual one-to-one interviews to assess the way stakeholders perceived and evaluated the FMP and more specifically the role of the government in this multi-actor setting. (Vermeesch I. and Crabbé A. 2015. *De veranderende rol van de overheid in multi-actor governance voor duurzaam materialenbeheer*, Vlaams Tijdschrift voor Overheidsmanagement. Themanummer Overheid in transitie(s)²⁶).

²⁶ https://www.vlaanderen-circulair.be/src/Frontend/Files/userfiles/files/2015%2002%2006%20VTOM%20SuMMa%20Vermeesch%20Crabbe%20_final%20incl%20abstract%20v3.pdf (Dutch)

In June 2016, the stakeholders of the FMP were also consulted on several content topics such as the bio-economy, circular purchasing, valuable metals, a market for recycled materials, circular economy in the building sector, chemicals and plastics, etc. The results of these thematic consultations were also taken into account when determining the content of the rolling work programme of Circular Flanders for the period 2017–2018.

Since the beginning of 2017 the SuMMa policy research centre was renewed and renamed as the **Policy Research Centre Circular Economy**. In the period 2017–2021 it will carry out policy research to monitor, stimulate and contextualise the progress of the Flemish region towards a circular economy. Additionally, the Policy Research Centre on the Circular Economy (see also paragraphs Dedicated national strategies or roadmaps for material resource efficiency and for circular economy and Examples of good practice and innovative approaches) conducts research which is meant to have an impact on ongoing policy processes. One of the centre's focal points will be the economic effects associated with the introduction of a circular economy and the way in which these are affected by policy measures. Outputs will be policy advice in contexts of, for instance:

- market acceptance;
- learning effects;
- effectiveness of funding and revenue models;
- the expected impact on vulnerable groups on the labour market;
- agreements between the government and other actors in Flanders.

Furthermore, **Flanders Circular**, a partnership led by the Flemish government, was founded in March 2017. It brings together business, government, the knowledge sector, civil society and the financial community, through accompanying and supporting them and further encouraging and anchoring innovation. The next years' focus will be on the circular city, circular business models and circular purchases.

Wallonia

- In Wallonia, the development and implementation of resource efficiency and circular economy policies are negotiated at the level of the Walloon government in association with the Public Service of Wallonia (the administration; mainly the General Secretariat, Sustainable Development Department; the Directorate-General for Agriculture, Natural Resources and Environment/DGO3; the Directorate-General for Land-use planning, Housing, Patrimonies and Energy/DGO4; and the Directorate-General for Economy, Employment and Research/DGO6) and relevant stakeholders (sectoral federations) or at the federal level for product policies.

According to the sector concerned – business, households, agriculture – discussions are often organised to balance public authority objectives with existing constraints on the sector.

The Economic, Social and Environmental Council brings together trade union and employer representatives (the social partners) in a single place. They meet at the CESEW to move forward together on concrete projects. They thus actively participate in the economic, social and environmental development of the region. The CESEW has three missions: to give opinions, to organise social consultation and to provide the Secretariat of specialised Councils²⁷.

- **Short Cycles Reference Centre:** launched in 2013, the Short Cycles Reference Centre is the contact point for any accompanying structure regarding short cycles. It will establish a catalogue of direct and indirect actors in Wallonia, it will network and strengthen the actors and will foster the emergence of innovative sustainable short-cycle projects.

²⁷ <https://www.wallonie.be/fr/guide/guide-services/16286> (French)

This initiative aims to highlight local producers and introduce them to consumers. The Reference Centre was set up to help SMEs that choose short cycles to develop.

Approaches to resource efficiency and circular economy policy evaluation

Federal

Firstly, to evaluate impacts and effectiveness of policies in this area, the **Knowledge Centre for Sustainable Economy** keeps track of policymaking on regional, federal and European levels for matters having an impact on the circular economy. As a federal institution, we do not have a mandate to evaluate the impact or effectiveness of regional policies, but we do incorporate the published figures and reports in our analyses.

Secondly, we monitor new federal policies and try to develop measures or find data that can measure the impact of these. At the moment, an evaluation of the 21 measures is being done to see what impact they had and to propose follow-up and extra measures that will enhance the transition in the future. This is done in collaboration with the Federal Ministry for the Environment as the measures were introduced in that way.

Flanders

The functioning and the results of the FMP were evaluated, in 2015 by means of stakeholder consultations. (see also 'Institutional setup and stakeholder engagement') The broad stakeholder consultations of June 2016 focused specifically on content and priority topics. The findings of this evaluation (see also Dedicated national strategies or roadmaps for material resource efficiency and circular economy) were used in developing the new concept and new priority actions of Circular Flanders.

In the evaluation of the FMP, the following aspects were among those that came up.

- SuMMA: the quality of the research was very good with enough detail for short-term research that could be used to improve policy. Points of attention: the interdisciplinary character of the group was not used maximally and more cooperation with other research groups would have been an asset.
- Plan C: had a strong brand stimulating all circular-economy stakeholders to work together. The challenges set up by Plan C were also a great success and the personal advice helped starting circular businesses.
- Agenda2020: bringing stakeholders and different government departments together to stimulate the transition to a circular-economy was a big success. By means of the FMP, new partnerships have been formed, more stakeholders became cooperative, and the circular-economy was put on the policy agenda. On the downside, there was a lack of money to invest in projects or circular businesses and the slow pace of legislative change demotivated some partners.
- Better prioritisation of initiatives and choosing cross-cutting topics rather than sectoral approaches are key.

For some specific policy measures, *ex-ante* or *ex-post* evaluations were carried out.

An **ex-post evaluation** in 2018 of Flanders anti-litter measures, based on a qualitative and quality assessment of rather preliminary results after just one year, shows that progress was limited with the current set of measures and that additional action is needed.

An **ex-ante impact assessment** in 2015 concluded that the introduction of a deposit systems for single-use beverage packaging in Flanders had a number of clear benefits, but also some drawbacks. The benefits were a decrease in littering of 10–15 per cent in weight or 20–40 per cent by volume of total littering; reduced cost for cleaning paid for by local governments, varying from EUR 1.8 million to EUR 15.2 million;

and an increase in the recycling rate of single-use packaging, especially of polyethylene terephthalate (PET) bottles. The drawbacks of the deposit system were the high cost, three times higher than the cost of the current collection system; the structural deficit in the system if the return rate rises above 90 per cent; and the risk of additional cross-border purchases from neighbouring countries. A specific legal analysis concluded that introducing a deposit system in Flanders would be possible, but very complex and preference should be given to a Belgian system, covering the country's three regions: Brussels, Flanders and Wallonia²⁸.

Additionally, the Policy Research Centre on the Circular Economy conducts research which is meant to have an impact on ongoing policy processes. One of the centre's focal points will be the economic effects associated with the introduction of a circular economy and the way in which these are affected by policy measures. Outputs will be policy advice in contexts of, for instance:

- market acceptance;
- learning effects;
- effectiveness of funding and revenue models;
- the expected impact on vulnerable groups on the labour market;
- agreements between the government and other actors in Flanders.

Depending on the topics and cases that will be studied, the research may include both ex-ante and ex-post evaluations.

Wallonia

Some of the indicators discussed under the next paragraph on monitoring and targets can be used to indirectly measure progress due to policies. These indicators can be supplemented by more specific surveys, such as the Waste Prevention Barometer (Baromètre Prévention Déchets).

Monitoring and targets

Targets for resource efficiency and circular economy

Flanders

In its long-term vision, the Flemish government has articulated an aspirational goal of being circular by 2050. Study on quantifiable indicators is ongoing within the Policy Research Centre for Circular Economy, providing input by 2021 on, for example, the development of targets in the future.

More specific targets can be found in the **Implementation Plan on Household Waste and Comparable Industrial Waste 2016–2022**. The programme aims to achieve a decoupling of economic/population growth and waste generation. The following targets have been developed.

- **Residual waste:** the Flemish target under the previous policy plan was an average target of 150 kilograms per person per year (kg/person/year) which was reached in 2015. The targets in the new 2016–2020 Plan have become more diversified over different types of municipalities, taking into account their socio-economic dimensions. A tailor-made approach was introduced as, for example, coastal municipalities with many tourists generate much more residual waste than comparable municipalities in the countryside. The targets range from 116 kg/person/year for suburbs to 258 kg/person/year for coastal municipalities. In total for Flanders an average of 140 kg/person/year should be reached, taking into account that it no longer covers just household

²⁸ <http://www.ovam.be/afval-materialen/huishoudelijk-afval-en-lokale-besturen/statiegeld> (Dutch)

waste fractions, but mixed waste from households and mixed company waste that is comparable in nature, composition and quantity.

- While Flanders produced an average of around 522 kg of **household waste** (including company waste comparable in nature composition and quantity) per person in 2012, 2013 and 2014, **waste generation** should not be more than 502 kg in 2022. In essence this means a standstill in waste generation for Flanders as a whole – taking demographic evolution into account this implies a decrease in waste generation per person, not only of household waste, as was the case under the previous target, but also of comparable business waste.
- **Reuse**: by 2022, 7 kg/person/year of reuse has to be reached.
- **Litter**: by 2022, litter will decrease by 20 per cent meaning that a maximum of 14.000 tonnes will be generated. Furthermore, as litter is predominantly found in motorway car parks, public transport stops and waste collection points, these places must improve their Cleanliness Index by 10 per cent scores by 2022, compared to 2014.
- **Similar mixed waste** (similar in nature and composition to mixed waste from households): by 2022, 15 per cent less industrial residual waste will be generated, with as a reference: 833 kilotonnes in 2013, taking employment into account.

Food waste targets:

- Optimal valorisation of **food processing residues** from production, distribution and catering: 15 per cent more valorisation by 2020, and 25 per cent by 2030, relative to 2015. Optimal valorisation means a shift from material applications to food/feed applications, or from residual waste to material/food/feed applications. The target is to reduce food loss from farm to fork by 15 per cent, not to shift food losses from food to feed. Food for human consumption that is not eaten by humans is considered as food loss, also when it goes to animal feed²⁹.
- These targets are combined with the mandatory separate collection of kitchen waste and former food stuffs of vegetable and animal origin by 2021. At least the following percentages of separately collected biowaste have to be recycled:
 - vegetable/fruits/garden waste- waste: 95 per cent;
 - green waste: 95 per cent;
 - other organic-biological waste: 90 per cent.

These percentages envisage also to limit impurities in the collected biowaste. They imply a maximal allowable contamination percentage and are considered as an indicative target.

Biomass from forests, nature, landscaping

Some quantitative and qualitative targets have been added to the Action Plan for the Sustainable Management of (Residual) Biomass Streams 2015-2020.

- Stimulating cooperation in management of forests, nature, landscaping in order to create synergies for aspects such as residue management, infrastructure and equipment, marketing, quality of biomass. Final target is to mobilise more biomass for the bio-economy.
- By 2020: harvesting of 135,000 tonnes of low-grade wood from the Flemish forests (branches, treetops, other low-grade wood) compared to 2013 harvest levels of 90,000 tonnes.
- By 2020: harvesting 114,000 tonnes of woody biomass from the maintenance of roadsides and small landscape elements – hedgerows, roadside trees and wood on road shoulders.
- By 2020 diverting at least 10 per cent of roadside mowing residue to anaerobic digestion to increase the contribution of this waste stream for renewable energy production.
- Marketing of at least 2,000 tonnes of organic waste from heath-land management as a turf replacement in the production of potting soils or for use as a soil improver.

²⁹ www.voedselverlies.be/en (English)

Industrial and post-consumer wood waste

- Mandatory recycling of untreated A-grade post-consumer waste such as wooden packaging.
- By 2020, at least 50 per cent of the Flemish production of B-grade wood waste has to undergo additional sorting to create recyclable and non-recyclable wood-waste fractions.
- By 2030 all Flemish B-type wood has to be sorted (sorting of a recyclable fraction) prior to its use for energy valorisation.
- By 2020, chipboard produced in landers must consist of at least 70 per cent postconsumer wood waste.

In other policy domains in which recycling rates are already very high, for example in the building and construction sector where recycling rates are higher than 96 per cent, no new targets have been introduced. Instead there is a focus on the quality of recycling rather than the quantity. Tracimat, for example, is a traceability system to separate contaminated construction and demolition waste streams, such as asbestos from non-contaminated waste streams.

Wallonia

The **REGAL Plan**³⁰, adopted by the Walloon government on 9 July 2015, and revised on 8 February 2018, is designed to reduce food loss by 30 per cent by 2025 compared to 2015. Many stakeholders were consulted to identify the major steps to be taken to effectively fight food loss at all stages of the food chain. The cross-cutting REGAL Plan involves different members of the Walloon government (the ministers of the environment, agriculture, economy, industry, research, employment, training, social action and health), and brings together different actors from municipalities, agriculture, food industries, food services, retailers, waste management, social economy, health, education, research, employment, food banks and charities around 17 priority actions divided into five axes.

All levels of the Moerman scale, the hierarchy of food waste management, are taken into account in the Plan, which is in line with the current guidelines defined at international and European levels – Sustainable Development Goal (SDG) 12.3, the European Circular Economy Package, the Waste Framework Directive EU 2018/851, the EU Platform on Food Losses and Food Waste, amongst others.

At the end of 2018, around 60 per cent of the actions of the REGAL Plan had been implemented: these mainly concern the organisation of participatory exchange forums on the logistics of food donation, the diagnosis of food waste in school canteens or the best practices in primary production and transformation, etc.; audits and monitoring of food loss in different sectors, primary production, the food service sector, the food industry, households, etc.; the signing of charters and green deals (sustainable canteens³¹); the promotion of the Rest-O-Pack³²; the organisation of awareness campaigns and regional days on food loss or the development of electronic exchange platforms to promote food donations³³.

Action 16 of the REGAL Plan aims to create a reference system for calculating food loss and food waste in Wallonia. Estimates have already been made for certain sectors – primary production, the food and food service industries, households, etc. Work is still ongoing for other sectors and the supported methodology is based, as far as possible, on the results of the Food Waste Quantification Manual (FUSIONS), the work of EUROSTAT and the Food and Agriculture Organization of the United Nations (FAO), the Food Loss and Waste Protocol of the World Resources Institute and the orientation given by the subgroup on food waste measurement of the EU Platform. The development of a reference system for calculating food losses (2015–2017) at all levels of the food chain in Wallonia should be finalised by the end of 2019.

³⁰ <http://moinsdedechets.wallonie.be/fr/je-m-engage/gaspillage-alimentaire> (French)

³¹ <https://www.greendealcantines.be/> (French)

³² <http://environnement.wallonie.be/restopack/> (French)

³³ <https://www.bourseauxdons.be> (French) or <https://www.foodwe.be> (French) for example

The presence of target values and numerical objectives in the PWD-R varies from one strand to another (see 'policies which include elements of material resource efficiency'), depending on various factors:

- coherence with the objectives already defined at the European level and/or the desire of Wallonia to be more ambitious and exceed these objectives;
- thoroughness and the level of data mastery: if for certain waste flows, there is still uncertainty deemed too significant regarding waste supply or the rates of recycling or energy recovery, the choice was made not to define precise objectives, since the first measure to be implemented is the improvement of the quality of data;
- levels of performance achieved and prospects for improvement: when a waste flow has already been almost fully optimised and recovered, it is unrealistic to set more ambitious objectives in relation to the current situation;
- level of expertise of the public authorities regarding the expected effects of certain measures: a priori, it is difficult to predict whether measures relating to research and development (R&D) will be successful, or to assess with certainty the impact of information, awareness-raising or inspection campaigns.

These factors explain why for certain situations, the PWD-R proposals for action are not accompanied by numerical objectives leading up to 2025. However, for those which will probably have an indirect effect on improvements in the prevention and management of waste or public cleanliness, assessment of the expected effects can often only be qualitative. More information on objectives and targets in PWD-R can be found on the website³⁴.

The aim of Wallonia's recently adopted **Action Plan for Responsible Public Procurement**³⁵ (Plan d'Actions Achats Publics Responsables 2017–2019) is to ensure a 100 per cent sustainable public procurement by 2020. This means public procurement that fosters employment without social dumping, is SME-friendly, contributes to the fight against climate change, and encourages efficient resource management.

Indicators to monitor progress towards a resource-efficient circular economy

Federal

We have not yet developed follow-up indicators for our federal circular economy policies. However, a study was carried out by Pricewaterhouse Coopers (PwC) in 2015 for the Federal Minister for the Environment to determine what indicators would be useful for the federal circular economy policy. Developing most of these indicators requires collecting additional information, which will be discussed by a working group set up after establishment of the circular economy indicators at the EU level, in December 2017.

Monitoring of the transition toward a resource-efficient, circular economy is being put in place. A **platform** has been created with the regions in February 2018 to discuss the availability of data and expert knowledge concerning the monitoring of circular economy. While using the monitoring framework of the European Commission as a starting point, we aim to develop a much more comprehensive view of the circular economy by including more parameters for all the levels of circularity – reduce, reuse, re-think, re-design, recycle.

³⁴ <http://environnement.wallonie.be/dechetsressources/docs/WWRP-NTS-EN.pdf> (non-technical summary in English)

<http://environnement.wallonie.be/rapports/owd/pwd/index.htm> (various documents, including the full-length version of the Plan (French))

³⁵ <http://developpementdurable.wallonie.be/theme/achats-publics-responsables> (French)

http://developpementdurable.wallonie.be/sites/default/files/2017-10/plan_apr_complet.pdf (French)

The study carried out for the Federal Minister for the Environment aimed at monitoring six key parameters: resource productivity, energy productivity, waste generated per person, costs of waste management compared to total input costs, respect for the Lansink waste hierarchy and the percentage of repair activities compared to total market services. In a first goal-setting attempt, the focus was on four industries that are very important for the Belgian economy: chemistry, food and beverages, machines and appliances and automobile industries.

As legislation and policymaking for the circular economy have not yet been defined, monitoring and analysis is currently fragmented across regions and the federal level with each institution measuring progress in their own field. The goal of the platform will be to put all data and policies together to monitor the evolution of the entire Belgian economy.

Flanders

The Policy Research Centre on Circular Economy will develop a **monitoring tool for the circular economy** in Flanders by 2021. This tool is intended to track progress towards a circular economy and to quantify the evolutions, to support and to have an impact on policy making in the context of the transition. Besides bringing together a dashboard of indicators allowing measurement and giving feedback on the progress towards a circular economy in Flanders based on state-of-the-art indicators and data, the objective is to establish a dialogue with policy makers and other stakeholders. The focus of the monitoring will be on outputs and outcomes of the circular economy. We foresee the measurement of outcomes, for instance in environmental (for example, climate impacts), economic, for example, access to materials, and societal, for example, types of jobs, aspects to be further elaborated and augmented. The idea is neither to summarise the circular economy in just one number, nor to be able to compare or benchmark between regions or countries. The scope of the circular economy monitoring is Flanders as a region, but it is also meant to reflect the open character of the Flemish economy by considering impacts abroad. After refining the concept, the short-term plan is to create a first outline elaborated with indicators mainly borrowed from existing frameworks, and to aim for 2021 for final delivery of an extended circular economy monitoring tool that includes newly developed indicators focusing, for example, on product chains and on linking the circular economy to the concept of planetary boundaries. The added value of the monitor will be to provide a more direct policy feedback, by providing a bridge between information delivered by macro and micro indicator scores. This will be done by installing a meso level of indicators that will show the material reality behind systems fulfilling societal needs. Examples of such systems are mobility, housing, nutrition or consumption goods.

Progress and publications can be followed at: <https://vlaanderen-circulair.be/en/summa-ce-centre> (English)

Flanders is looking to develop new indicators which move on from typical waste indicators towards more circular ones. These are currently being developed through an array of studies.

Currently, studies are being conducted on **footprint methodology** for the circular economy.

Carbon footprint indicators are useful for establishing the link between the circular economy strategies and climate policies. Recycling and reuse only contribute in a limited way to lowering the territorial carbon dioxide emissions of a country, especially for a region like Flanders that has a very open economy. They have a greater impact, however, on the carbon footprint and therefore carbon footprint indicators can be useful for policy purposes. They can be used for translating climate targets into circular economy targets and they can show the wisdom of integrating circular economy strategies into climate policies.

As stated in paragraph Seeking synergies with other policy areas, a study has been conducted on the **carbon footprint of Flemish consumption**. This includes the emissions from the mining, and production and transport of goods beyond Flanders. The emissions in Flanders caused by the production of goods that are exported, are not included. This study shows that greenhouse gas emissions caused by Flemish

consumption (consumption perspective) are twice as high as the emissions caused by Flemish production and that the carbon footprint of the Flemish consumption is increasing. This study also shows that the approach of territorial emissions has to be complemented with a consumption perspective to avoid the pitfall that going for more circularity inside the borders would lead to a greater impact abroad. Only then will measures taken to save emissions in the earlier stages of a product cycle, such as eco-design which often takes place in other countries, be taken into consideration. In 2018 further work will be done on breaking down overall carbon footprints of Flemish consumption into the main consumption categories such as housing, transport, food and consumer goods to see how climate targets can determine the degree to which we should dematerialise and reuse/recycle in the different categories.

Additionally, studies are conducted on the **material footprint** of several product groups and material flows. The studies are conducted in parallel with the carbon footprint approach and include the full lifecycle of a product. Currently, longitudinal monitoring is being developed.

Another approach that is being used is the **material productivity of the Flemish Economy**, which has been developed in the context of the Green Economy Monitor. The material productivity of the Flemish economy is being composed of both raw material consumption (RMC) and DMC. Both are used in this monitor, calculated bottom-up from around 60 individual material flows, aggregated into biomass, metal ores, non-metallic minerals and fossil energy carriers.

The main purpose of the monitor is to create time series and to follow-up decoupling throughout time. For DMC data, a benchmark with EU countries is available. The basis of the Green Economy Monitor is the indicator framework provided by the Organisation for Economic Co-operation and Development (OECD). The monitor is meant to assess progress of Flemish policy and the extent to which opportunities are taken.

Research has also been conducted on the **leakage of materials** from the Flemish economy. Leakage describes materials that disappear for any future use – for example, in case of aluminium cans, some aluminium is lost through oxidation and becomes unsuitable for further use. The leakage of materials is defined as the disappearance of materials for future use within a certain time span, due to the lack of recycling when they become waste. Research has been carried out for aluminium and copper, which shows that leakage is very high, especially for products with short life cycles such as aluminium cans. This points to a need for an indicator which measures the loss of a non-renewable material to provide better insights into how well or badly the Flemish economy is performing in terms of circularity. It demonstrates the importance of extending the lifetime of products and in addressing the export of waste to places where no recycling occurs. Flanders is now working on a set of indicators for the circular economy. The set is not there yet but the leakage indicator may be a good candidate for inclusion.

Wallonia

The Operational Directorate-General for Agriculture, Natural Resources and the Environment, which is part of the Public Service of Wallonia, publishes a State of the Walloon Environment report³⁶ – an obligation under the Walloon Code of the Environment³⁷.

These reports contain:

- critical, evaluative and prospective **monitoring** of various components of the environment and the pressures exerted by human activities;
- a management analysis conducted by environmental authorities, businesses and voluntary associations;

³⁶For the last latest report translate in English, see this link:

<http://etat.environnement.wallonie.be/contents/publications/state-of-environment-report---wallonia--2017.html>

³⁷ Book 1 of the Environment Code (Art. D.32 to D.36).

<http://environnement.wallonie.be/legis/Codeenvironnement/codeLIEnvDispcommunesgenerales.htm> (French)

- an assessment of adherence to EU directives and **compliance** with international commitments on the environment;
- a review of efforts for sustainable development made in the Walloon region under international conventions developed as part of the United Nations Conference on Environment and Development and the principles of Agenda 21.

From 2018 onwards, the various indicators of the state of the Walloon environment are up to date on its website³⁸, providing different types of indicators, including environmental, socio-economic and health indicators as well as resource efficiency ones:

- **material flow accounts:** RMC, raw material input (RMI), direct material input (DMI), DMC, physical trade balance (PTB), net additions to stock (NAS), domestic processed outputs (DPO), productivity of materials, substitution of extracted or imported materials³⁹;
- **energy intensity** index⁴⁰;
- **water abstraction and water exploitation** index⁴¹;
- **eco-efficiency** of the economy:
 1. industrial sector:
 - energy consumption⁴²;
 - emissions of air pollutants;⁴³
 - water consumption and wastewater discharges;⁴⁴
 - generation of waste⁴⁵;
 2. transport sector⁴⁶;
 3. electricity production;⁴⁷
 4. agricultural sector⁴⁸;
 5. residential sector⁴⁹;
 6. tertiary sector⁵⁰;

³⁸ <http://etat.environnement.wallonie.be/home.html> (only for the French version)

<http://etat.environnement.wallonie.be/contents/publications/state-of-environment-report---wallonia--2017.html> (English)

³⁹ http://etat.environnement.wallonie.be/files/Studies/Rapport_Analyse_Flux_de_mati%C3%A8res_-_2015_.pdf (French)

<http://etat.environnement.wallonie.be/contents/indicatorsheets/RESS%201.html> (French) or p°48 of the State of Environment Report - Wallonia 2017

⁴⁰ p°48 of the "State of Environment Report - Wallonia 2017"

⁴¹ p°49 of the "State of Environment Report - Wallonia 2017"

⁴² <http://etat.environnement.wallonie.be/contents/indicatorsheets/INDUS%201.html?thematic=202bbc7d-8c7b-4349-8e58-4ebfa558c313> (French), or p°74 of the "State of Environment Report - Wallonia 2017"

⁴³ <http://etat.environnement.wallonie.be/contents/indicatorsheets/INDUS%202.html?thematic=202bbc7d-8c7b-4349-8e58-4ebfa558c313> (French), or p°75 of the "State of Environment Report - Wallonia 2017"

⁴⁴ <http://etat.environnement.wallonie.be/contents/indicatorsheets/INDUS%203.html?thematic=202bbc7d-8c7b-4349-8e58-4ebfa558c313> (French), or p°76 of the "State of Environment Report - Wallonia 2017"

⁴⁵ <http://etat.environnement.wallonie.be/contents/indicatorsheets/INDUS%204.html?thematic=b1275a06-3531-44d0-a8d4-42d3d9ddb93c> (French), or p°77 of the "State of Environment Report - Wallonia 2017"

⁴⁶ <http://etat.environnement.wallonie.be/contents/indicatorsheets/TRANS%206.html?thematic=202bbc7d-8c7b-4349-8e58-4ebfa558c313> (French), or p°85 of the "State of Environment Report - Wallonia 2017"

⁴⁷ <http://etat.environnement.wallonie.be/contents/indicatorsheets/ENER%205.html?thematic=202bbc7d-8c7b-4349-8e58-4ebfa558c313> (French); or p°72 of the "State of Environment Report - Wallonia 2017"

⁴⁸ http://etat.environnement.wallonie.be/contents/indicatorsheets/AGRI_7.html?thematic=202bbc7d-8c7b-4349-8e58-4ebfa558c313 (French); or p°64 of the "State of Environment Report - Wallonia 2017"

⁴⁹ <http://etat.environnement.wallonie.be/contents/indicatorsheets/MEN%205.html?thematic=202bbc7d-8c7b-4349-8e58-4ebfa558c313> (French); or p°96 of the "State of Environment Report - Wallonia 2017"

⁵⁰ <http://etat.environnement.wallonie.be/contents/indicatorsheets/TERT%201.html?thematic=202bbc7d-8c7b-4349-8e58-4ebfa558c313> (French), or p°88 of the "State of Environment Report - Wallonia 2017"

In addition to SOERW 2017, all the reports on the state of the Walloon environment and the associated documents (source data, figures, maps, case studies and study reports, methodological sheets) can be consulted online and downloaded at <http://etat.environnement.wallonie.be> (French)

In the framework of the 2nd Walloon Sustainable Development Strategy (July 2016), a list of 70 sustainable development indicators⁵¹, linked to the SDG indicators, was developed, including the resource efficiency indicators on decoupling domestic material consumption from GDP and the Walloon ecological footprint.

Resource efficiency, circular economy and the 2030 Sustainable Development Goals

Flanders

The Flemish government is currently working on a **vision statement, Vizier 2030**, translating the 17 United Nations Sustainable Development Goals (SDGs) into its own policy objectives⁵².

Recently the Flemish government gave its first approval in principle and the social-economic advisory councils have been asked for their advice. The Flemish government's ambitions for an open and international Flanders translates into seven transition priorities, with United Nation's Agenda 2030 and the SDGs as common features. Specifically for Agenda 2030, the Flemish government wishes to achieve 49 objectives by 2030. These objectives are closely connected to sectoral long-term policies that are being established at this moment, such as the Energy and Climate Plan 2021–2030. The resource efficiency/circular economy Objective 32 has particular relevance: *'by 2030 we will close as many cycles as possible in pursuit of a circular economy. The carbon and material footprints of Flemish consumption will be reduced in relation to the quality of life. Food losses in Flanders will be reduced by 30 per cent'*. After the approval of these objectives by the Flemish government, the policies will be further integrated into the Flanders' 2030 Objectives. Further steps towards the Flemish 2030 Agenda will be the implementation of the 2030 Objectives and the development of a monitoring and reporting system.

Several **instruments** that are **already in place** contribute to the implementation of the SDGs. For Flanders, *SDG 12: Ensure sustainable consumption and production patterns*, is the most relevant. Flemish policies aim to produce, use and consume materials, commodities and their derivatives as efficiently and effectively as possible, and to close materials cycles. To achieve this a mix of policy instruments will be used:

- economic instruments: taxes on landfill and incineration, differentiated collection rates on the amount of waste and subsidies for recycling and reuse centres;
- legal instruments: landfill and incineration ban on recyclable waste, must-sort policies and extended producer responsibility;
- awareness-raising campaigns.

During the United Nations High-Level Political Forum in New York (18 July 2017) Belgium presented its evaluation report on the efforts to achieve the SDG's⁵³.

The Flemish government and all the actors in the food chain developed the **Roadmap on Food Losses** (2015-2020), which describes a large number of actions. Each year a report is presented to the government. A platform on food losses with representatives of the whole food chain (Ketenplatform Voedselverlies) follows the implementation of action. Food losses in Flanders are calculated and monitored⁵⁴.

⁵¹ http://icpib.iweps.be/empreinte-ecologique-wallonie.php?empreinte_indicateur_id=776003 (French)

⁵² https://do.vlaanderen.be/sites/default/files/atoms/files/Visienota_Vizier2030.pdf (Dutch)

⁵³ https://www.sdg.be/sites/default/files/publication/attachments/nrv_belgium_english.pdf (English)

⁵⁴ <http://www.voedselverlies.be/en#monitoring> (English)

All action on resource efficiency and circular economy aims to achieve the SDGs. It is therefore difficult to highlight specific initiatives. Some examples are presented below.

- **SDG 2: End Hunger, achieve food security and improved nutrition and promote sustainable agriculture.** By 2019 Wallonia aims to make consumption and production more sustainable across food supply chains, including by shortening the latter (**2nd Walloon Sustainable Development Strategy**). An online platform was put in place in 2014 to facilitate the purchase of local and seasonal products at the community level. It offers a public procurement interface, linking suppliers of agricultural products to canteens, restaurants and other regional and local public administrations and institutions wishing to acquire food, flowers and plants easily; similar efforts are undertaken by civil society networks such as RAWAD and RABAD. A first strategic plan for the development, processing and consumption of organic agricultural produce runs until 2020 (*Premier Plan Stratégique pour le Développement de l'Agriculture Biologique en Wallonie 2013–2020*); it aims to double the usable hectareage by 14 per cent compared to 2012 and involves almost 1,700 officially certified organic plots.
- **SDG 6: ensure availability and sustainable management of water and sanitation for all.** In Wallonia, there is a management plan for every river basin district, the second version of which covers the period 2016–2021. This aims to protect, improve and restore surface water bodies, groundwater bodies and protected areas. In addition, a public water management corporation (*Société Publique de Gestion de l'Eau*) is responsible for the collection and treatment of wastewater and the protection of water resources, including catchments and bathing areas. This allows distribution companies to ensure a supply of drinking water of sufficient quality and quantity for all.
- **SDG 12: Ensure sustainable consumption and production patterns.** In the context of the Walloon region's policies on the circular economy, specific measures on waste management (**Walloon Waste-Resources Plan**) were adopted in 2018 (see 'Policies which include elements of material resource efficiency'). A new vision of the management of flows favours waste recycling and recovery. The waste plan also aims to introduce new types of resources in various production sectors and incorporates a new component concerning public cleanliness. Since 2015, Wallonia has also undertaken 17 actions aimed at reducing food waste by 30 per cent at all levels of the food chain by 2025 compared to 2015 (*Plan Wallon de lutte contre les pertes et gaspillages alimentaires/Plan REGAL*). The Second Walloon Sustainable Development Strategy also includes measures to encourage more sustainable management of natural resources by using them more efficiently, making greater use of available resources at a local level and promoting reuse and recycling in a circular economy. The region also focuses on sustainable nitrogen management and pesticides reduction (*Plan de gestion durable de l'azote dans l'agriculture*; *Plan de réduction des pesticides*) in the agricultural sector. The recently adopted Walloon policies in the field of public procurement (*Plan d'Actions Achats Publics Responsables 2017–2019*) aim to ensure a 100 per cent sustainable public procurement by 2020.
- **SDG 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.** Wallonia contributes to the protection of seas and oceans through, inter alia, hydrographic districts management (*Plans de gestion des districts hydrographiques 2016–2021*), sustainable nitrogen management in the agricultural sector (*Plan de gestion durable de l'azote en agriculture 2014*) – which makes it possible to combat eutrophication – and through measures such as the ban on disposable plastic bags, in place since late 2016, which helps reduce plastic waste accumulating at sea and forming 'plastic soup'.

Examples of innovative approaches and good practice

Examples of good practice and innovative approaches

Federal

A strategic investigation of different material flows in recycling centres started at the end of 2017 to identify design that prevents proper product recycling. Based on the study, we will discuss improvements with producers and distributors (for their own brand products). The first flow analysed is packaging made of plastic or metal and drink cartons (PMD).

Thirteen waste flows will be analysed over a period of three years – PMCs, other plastics, hollow and flat glass, textiles, end-of-life vehicles (ELVs), WEEE, tyres, batteries and accumulators, construction waste, paper/cardboard, small hazardous waste, scrap metal and organic waste. For each flow, sorting and dismantling centres will be visited. During those visits, field technicians will highlight difficulties they face every day in dealing with the waste flows they receive, and the sorting of secondary raw materials that are ready for recycling. Within this analysis, the accent is laid on the difficulties that are inherent in the design of a product. Once the difficulties have been identified, the goal is to start a dialogue with the product designers, through the producers and distributors, to modify the design. Product standards or norms can also be envisaged.

Flanders

Product-related policies, including on repair and reuse

- The calculation Tool to Optimise the Total Environmental impact of Materials (TOTEM)⁵⁵ for the material performance of a building was launched in February 2018. TOTEM helps architects, designers and builders to assess the environmental impact of building materials in a specific design, both at the level of individual environmental impact categories and at an aggregated level. It is intended to help the evolution towards low-material performance of buildings, as well as low-energy performance. The tool is mainly oriented towards building designers, but can also be used by clients, policy makers and other building professionals. This open-access tool provides transparent and objective environmental information for an audience with a limited or advanced knowledge about life-cycle analysis. The tool focuses on both residential and office buildings and enables an assessment of new buildings as well as a simplified assessment of refurbishment projects – a more detailed approach for the assessment of refurbishments will be developed in future. Currently, there is no legal requirement for the use of the TOTEM tool in the building sector. In the short term, the aim of public authorities is to stimulate material-related environmental awareness in the building sector and to gain insights into the way different users are working with the tool.
- Ecolizer is an ecodesign tool for all designers and companies who want to know and lower the environmental impact of their products – it calculates the environmental impact of a product quickly and easily. Designers can calculate the overall environmental impact, but also the impact of each phase in a product's life cycle so that life-cycle phases with high environmental impact can be tackled. In addition to the analysis of a specific product, users can also compare the scores of products with each other. How does Ecolizer work? The environmental impact is calculated on the basis of all materials, processes, packaging and transport modes that are used in a product life cycle. The user provides the information, Ecolizer does the calculation and provides the environmental impact as one number.

⁵⁵<https://www.ovam.be/sites/default/files/atoms/files/Environmental%20profile%20of%20buildig%20elements.pdf> (English)
<https://www.totem-building.be/pages/welcome.xhtml> (English)

- Since the early 1990s more than 120 reuse shops⁵⁶ have been gradually established in Flanders, offering second-hand goods, mainly furniture, electric and electronic devices, leisure items, textiles and clothing and toys. The shops had a highly professional marketing and branding strategy, a total turnover of EUR 45 million in 2014, up to 5 million customers each year and more than 5000 workers in partly employed through government-supported social economy schemes.

Taxation

Flanders has a system which combines a ban on landfilling of incinerable household waste with a tariff system for landfilling specific waste streams. In general, tariffs for landfilling range from EUR 101.91 per tonne for flammable waste to EUR 56.05 per tonnes for non-flammable waste. The system is designed to prevent landfilling of flammable waste by increasing the cost to a point at which it becomes economically unfeasible. It is forbidden to landfill or incinerate wastes which can be reused or recycled, including streams which have to be sorted. A similar system with regard to tariffs for incineration is used.

Financial supporting programmes

- Open call Circular Flanders
Both in 2017 and in 2018, Circular Flanders launched two open calls for projects relevant to the transition to a circular economy.

In **2017** the Flemish Minister of Environment earmarked a EUR 4.8 million subsidy for circular economy projects. Therefore Circular Flanders launched two subsidy calls in the summer of 2017: a call for projects in the context of the Green Deal Circular Purchasing and a call for projects relevant to Circular City and Circular Businesses. The target group for the subsidy call Circular Purchasing were participants of the Green Deal Circular Purchasing. Participants could work together to submit joint proposals. The target group for the call Circular City and Circular Businesses were (partnerships) of local governments, businesses, research institutions, organisations and citizens. Cooperation between different actors in the value chain was strongly encouraged.

The focus of the open calls in 2017 was the practical implementation and the demonstration of circular projects. Moreover, a lot of attention was paid to social innovation. Important assessment criteria were innovation, scalability, strong partnerships and learning and demonstration value.

In just three months, Circular Flanders received 134 proposals of which 63 projects were awarded a subsidy. These are very diverse and cover topics including the building sector (18 per cent), business models (15 per cent), biomass (11 per cent), plastics (10 per cent), energy and carbon dioxide (10 per cent), food (9 per cent), water (9 per cent), spatial planning (5 per cent), metals (5 per cent), textiles (4 per cent) and packaging (4 per cent). The main applicants were businesses (44 per cent), non-profit organisations (33 per cent), education and research organisations (13 per cent) and local government (10 per cent).

For the projects in the Circular City and Circular Businesses call a maximum of 80 per cent of the project costs were subsidized with a maximum subsidy of EUR 100000. For the projects in the Circular Purchasing call a maximum of 50 per cent of project costs were subsidized with a maximum subsidy of EUR 20,000.

The projects started in December 2017 and have to be finished before the end of 2019 for Circular City and Circular Businesses project, and for Circular Purchasing projects before 30 June 2019, the end of the Green Deal Circular Purchasing project.⁵⁷

In **2018**, the Flemish Minister of Environment earmarked an amount of EUR 5.3 million for circular economy projects, of which EUR 2.3 million will be awarded in the open call of Circular Flanders.

⁵⁶ https://www.ovam.be/sites/default/files/atoms/files/2015_Folder-Kringloop-engels_LR.pdf (English)

⁵⁷ More information about the ongoing projects can be found at: <http://vlaanderen-circulair.be/nl/doeners-in-vlaanderen?form=casesIndexForm&q=&themas%5B%5D=2#casesIndexForm> (Dutch)

In May 2018, another two calls for innovative circular economy projects were launched, once again one in the context of the Green Deal Circular Purchasing and one in the context of Circular City and Circular Businesses. The deadline for the two calls was 29 June 2018. We received 150 proposals and granted 57 projects for a total 4.7 million. The division in themes and sectors are very similar to what we granted in 2017. Eighteen projects from the first call of 2017 who received a code orange, meaning that the project idea was good, but the project should be improved, received the option of reapplying. Fifteen projects were successful. We funded the 15 projects for a total amount of EUR 1.5 million.

The conditions and assessment criteria for the 2018 calls are more or less the same as those in 2017. For the innovation criterion, several specific topics were included in the 2018 call:

- cooperation and partnerships in the entire value chain;
- system thinking – focusing the entire system of needs rather than one product;
- smart design – dematerialisation, virtualisation, optimisation, etc;
- repair, reuse and remanufacturing – extending the life span of products;
- new business models – especially product-service systems (PSS);
- smart-return logistics – traceability, collection points, shared transport, etc;
- smart technology as a driver for circular economy – the internet of things, block chain, artificial intelligence, virtual reality, augmented reality, big data, etc.

In total over the two calls in 2017-2018, we are funding 135 projects for 12 million euro. Most of these projects are with a diverse partnership (local governments, companies, research, NGO's).

- Flanders Circular is mapping the range of financing instruments available for the circular economy. This way, every initiator, whether for-profit or non-profit, can be helped to make progress based on the needs of the project. At the same time, Circular Flanders works on separate Flemish channels for circular project financing.

Research and Innovation

As one of the three pillars of the Flemish Materials Programme (FMP), SuMMa⁵⁸ carried out research on the role of policy in a transition to sustainable materials management in the period 2012–2015. SuMMa's mission was threefold: to provide scientific insights about policy-relevant challenges, to support stakeholders based on interdisciplinary cooperation and to build bridges between stakeholders to improve knowledge exchange and cooperation.

Since the beginning of 2017 the SuMMa policy research centre was renewed and renamed as the **Policy Research Centre Circular Economy**. In the period 2017–2021 it will carry out policy research to monitor, stimulate and contextualise the progress of the Flemish region towards a circular economy. As Flanders wants to lay a solid foundation for a circular economy by 2020, with minimal use of materials, energy and space while minimising the impact on the environment, three major policy-related questions need to be answered.

- 1) How can progress of the Flemish economy towards a circular economy be measured (more information under Indicators to monitor progress towards a resource-efficient circular economy)?
- 2) What are the economic effects associated with the introduction of a circular economy, and how are these affected by policy measures?
- 3) Which new technological, economic and societal trends have an impact on the evolution towards a circular economy, and how large is this impact?

⁵⁸ <http://steunpuntsumma.be/> (English)

Innovative business models

- The Circulator⁵⁹ is a project funded and executed by EIT Raw Materials in partnership with VITO, Circular Flanders, Delft University of Technology and Radboud University. The project aims to support aspiring entrepreneurs in making conscious strategic choices regarding the sustainability of their business model and value proposition. The Circulator offers a web-based tool providing an overview of the most relevant business models for the raw materials industry in the context of the circular economy, as well as relevant case studies. The central idea to the Circulator is that circular business models typically consist of a **mixture** of different strategies, that can be organised in three main categories:
 - sustainable materials management strategies that directly act on the material and product resources in the business model;
 - business strategies that help deliver circular value to the customer;
 - value network strategies to engage with actors beyond the company borders to achieve circular value networks.

Each category groups a number of specific strategies that have been observed in existing business cases. To create a circular business model suited to a specific company or start-up, the user can mix strategies from the three main categories and get inspiration from existing companies using a similar mix. To provide more guidance to the user, the project identified four **archetypes** that each represent a specific business focus as the main entry point for developing a circular business model.

- Some companies may want to focus on providing a service instead of a product as their main development strategy.
- Others may want to stick to selling a product, but one that is more circular than the ones currently available.
- Other companies see opportunities in developing a circular business model together with customers, suppliers and other actors in their value network.
- And a more general approach could be to focus on developing a sustainable business identity with circularity as a unique selling proposition.

The Circulator tool provides these four blends as an additional entry point for companies to identify business cases that fit their preferred strategic approach. To date the Circulator tool has been explored by 2,400 participants of which 600 used the tool in depth. However, the tool has not been actively promoted, although the ambition exists to do so in the near future.

- Developing training modules, guides, and tools on the circular economy tailored to specific target groups – accountants, lawyers, officials, environmental coordinators, financiers, etc. – and study programmes for designers, architects, engineers, economists, technicians, etc.
- Building up a case database⁶⁰ containing good Flemish and Belgian examples of circular businesses.
- Assisting individual starters, innovators, companies and organisations that are looking for information on the circular economy, a sounding board off which to bounce their circular idea, or potential new, interested partners.

Circular Procurement

Circular procurement is one of the three strategic themes of Circular Flanders for the period 2017–2018. Circular purchasing is the use of purchasing power to achieve the maximum positive ecological, social, and economic impacts throughout the whole working life of products, services and work. It is a process in which you buy change: public and private procurers seek solutions for the ever-changing and often temporary requirements of users within their organisations. This can be done, for example, by opting for

⁵⁹ <http://www.circulator.eu/> (English)

⁶⁰ <http://www.vlaanderen-circulair.be/nl/doeners-in-vlaanderen> (Dutch)

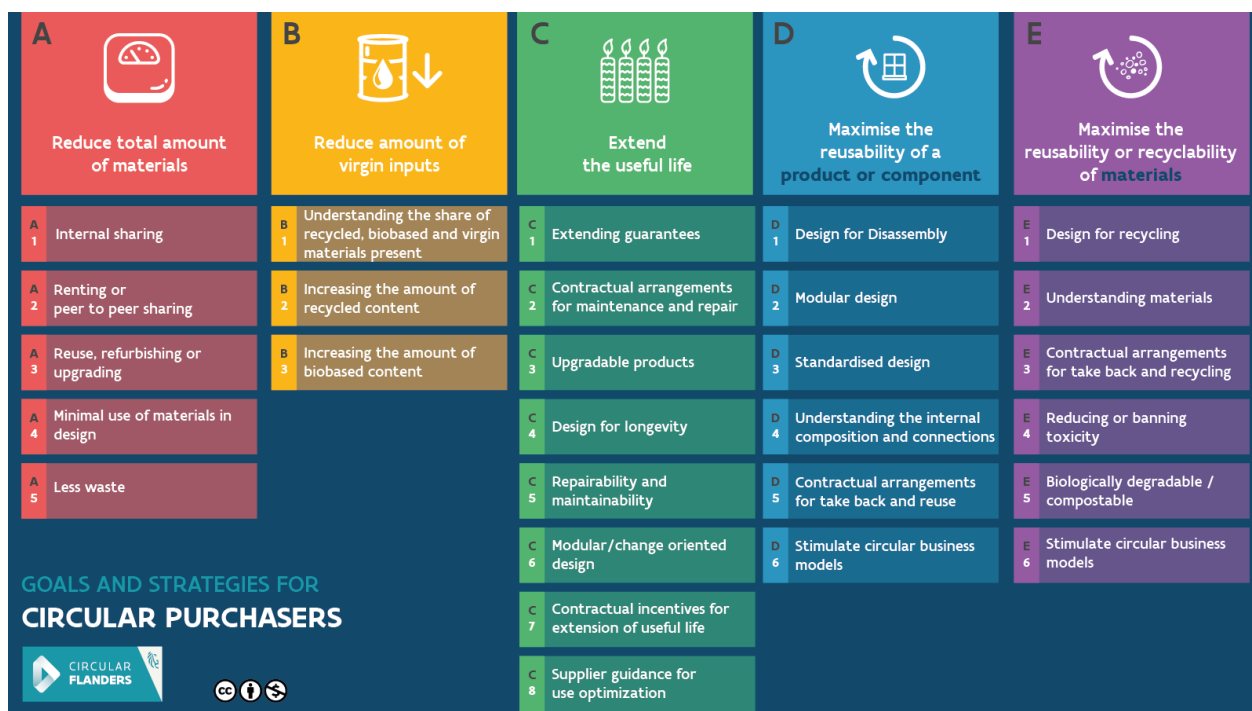
reusable materials, by choosing bio-based or biodegradable materials, by pooling products and resources or sharing them with other organisations, or by buying the use of a product rather than the product itself. Or instead of throwing away and replacing, they try out dynamic and adaptable products and solutions. The maximum preservation of the value of products, components, and materials is at the heart of the matter. Circular purchasing stimulates maximum cooperation and co-creation among all parties who can assist in closing cycles in the chain. Indeed, an organisation cannot close any circles with just their suppliers or waste collectors. If possible, it is also good to involve manufacturers, designers, recyclers, repairers, second-hand buyers, etc. in making arrangements for all stages of a solution.

On the 8 June 2017 the Greendeal Circular Procurement (GDCP⁶¹) kicked-off as the first joint project of Circular Flanders. It was signed by 162 participants (companies and organisations), the Flemish Minister of Environment and its initiators Circular Flanders, The Shift, the Association of Flemish Cities and Municipalities (VVSG) and the Bond Beter Leefmilieu (BBL, the Flemish federation of environmental NGOs). In total 108 purchasing organisations – public organisations such as OVAM and VRT, the broadcaster, local authorities, companies such as IKEA, Colruyt and Janssen Pharmaceutica, financial institutions including ING, BNP Paribas, Fortis, and Econocom, and 54 facilitators – research institutions, sector federations, etc. are involved.

The signatories GDCP will together carry out together more than 150 circular procurement projects by the end of 2019. Each procurer will buy at least two products or groups of products in a circular way. Extra financing is provided by the Flemish government to support pilot projects.

To support circular purchasing, a monitoring tool has been created to help GDCP buyers to determine circular goals and accompanying strategies for their circular procurement projects, keep track of progress and visualise the effects of their circular procurement projects.

Below you find the basis of the tool in which procurers choose their circular ambitions and they get an overview of possible strategies to reach that goal. Some of those strategies hold already a quantitative indicator, others evaluate the products or services in a more qualitative way.



⁶¹ <http://www.vlaanderen-circulair.be/nl/onze-projecten/detail/green-deal-circulair-aankopen> (Dutch)

The OVAM is now partner in the January 2019 launched CIRCPro Project. CircPro brings together eight public and three private sector organisations that will leverage 30 plus circular procurement pilots with a combined value of EUR 40 million to address this. Transnationally CircPro organises circular procurement expert task forces and cross-industry communities of practice, focusing on three pivotal scaling strategies 1) minimum circularity requirements to help building markets of scale for suppliers; 2) transnational and cross-industry communities of practice to build new and sustained partnerships between procurers, suppliers and the supply chain; and 3) learning and practical collaboration between procurers.

Regulatory arrangements

- With regard to waste, the **new Implementation plan 2016–2022** for household and comparable industrial waste makes it mandatory for municipalities to ensure the separate collection of many waste streams. Some streams are collected door-to-door collection or by a nearby bring system, others are must be collected through recycling yards. This policy ensures high-quality recycling⁶².
- **Flemish Integral Policy Plan for Plastics**⁶³
The Public Flemish Waste Agency (OVAM) is drafting a policy plan for the Flemish Government for plastics. The policy plan aims at covering the whole life cycle of plastics, linking these to the waste management phase. It will list more than 30 actions tackling current challenges in the collection, sorting and recycling of plastic waste. But more importantly, the plan will also act on preventive measures, looking into societal needs for certain plastic objects, systemic redesign and product design. The goal of the plan is to create a supporting framework for an integrated approach in Flanders. It sees plastic as a key material in our global society and economy, but we have to handle the valuable material differently today and in the future.

The plan is currently being finalized, and will be assessed by stakeholders, the Flemish Government and the Flemish Parliament.

- **Flemish Action Plan on Marine Litter**⁶⁴
On 5 October 2016, the Flemish Parliament adopted a resolution requesting the Flemish Government to develop an “integral action plan, containing goals in the short, medium and longer term, aiming to reduce plastic pollution”. The action plan in addition had to include measures related to the increased gathering of scientific knowledge, focus on communication/awareness raising and provide practical actions in the field.

In response to this resolution the Public Flemish Waste Agency (OVAM) drafted, in cooperation with all relevant stakeholders (governmental bodies, local authorities, port and waterways authorities, NGO’s and industry), an action plan on marine litter. The plan addresses all sources of marine litter and contains 21 concrete goals and 36 measures aiming to prevent the leakage of all types of solid waste to the marine environment.

The Flemish action plan on marine litter focusses on all sources/types of waste that can have an impact on the marine environment, being:

- waste generated on land, including litter;
- waste generated by shipping, offshore activities and aquaculture;
- floating litter in rivers, waterways and ports;
- plastics and microplastics, including industrial pellets;
- beach litter.

The goal of the plan is to:

⁶² https://www.ovam.be/sites/default/files/atoms/files/UitvoeringsplanHuishoudelijkenGelijkaardigBedrijfsafval_LR_2017_Engelstalig.pdf (English)

⁶³ <https://www.ovam.be/samen-richting-beleidsprogramma-kunststoffen-2019-2024> (Dutch)

⁶⁴ <https://www.ovam.be/afval-materialen/specifieke-afvalstromen-materiaalkringlopen/marien-zwerfvuil> (Dutch)

- provide an overview of all activities in Flanders that have a significant impact on the leakage of waste to the marine environment; and
- propose measures that can reduce marine litter and define goals/targets.

Spatial planning and urban policy

Back in the cycle (Terug in Omloop)⁶⁵ is a joint initiative between Flemish government departments, such as OVAM, the Government Architect of Flanders, the Innovation Agency, the Department of Environment and the team on city policy to stimulate a circular approach for land and soil. After a call, five pilot projects have been selected to start an ambitious process of realising a circular project on polluted sites.

For one of these projects, the **Potterij**⁶⁶, OVAM and its partners – the City of Mechelen; a social housing actor, Sociaal Huis; Thomas More University, Mechelen; and Flanders Circular – play a pioneering role. A small, but severely polluted, centrally located site in Mechelen, owned by OVAM, will be transformed into a beacon of the circular economy, with urban production but also a strong focus on citizen-driven circular economy. OVAM wants to bring new life into the Potterij in Mechelen as a circular laboratory – a place in which various initiatives with a view towards a more sustainable future are supported and where cross-pollination between various activities can occur.

Education and awareness raising

- To visualise a circular future, Plan C (now Circular Flanders) built **Reburg**⁶⁷, a virtual circular city in the year 2050. The goal of Reburg is to show what life would be like in a circular city. By using storytelling, movies, presentations and games, a circular future is brought to life. The story of Reburg is told in four chapters, four circular futures. For each future, a Reburg citizen tells her or his story and reveals related hot spots in the city.
- **The Masterclass Circular Economy**⁶⁸ gives an introduction on circular trends and circular business strategies. In four sessions of half a day, participants discover the opportunities for their business in a circular economy. The target audience consists of company directors, sustainability managers, starters, entrepreneurs and innovators from all sectors. Fees are charged but the Flemish government gives a considerable subsidy in the form of a 30–40 per cent discount to SMEs that participate. Topics discussed during the masterclass are: what is circular economy, why circular economy, evolution and policy, key drivers, financing, etc.
- The **Ecodesign in Higher Education**⁶⁹ (EHE) kit provides concrete guidance to teachers, professors, education coordinators and training councils on integrating eco-design into higher education training programmes. As various departments of a company are involved in the decision to bring a product to market, not only product designers, but also architects, economists, process engineers, business managers, OVAM would like to embed eco-design in all relevant teaching programmes.
- Through the OVAM **Eco-design Awards** for students, OVAM rewards the best projects from student designers with an eye for sustainability. Each year OVAM challenges students to design a product that changes the world. The stake? A cash prize of EUR 1000 and individual support by Flanders DC, the ultimate point of contact in Flanders for the creative sector. A jury of experts and professionals awards prizes in the categories thesis and year's work. There is also a public award. Through the Eco-design Award, OVAM wants to offer students encouragement and support and inspire young designers to bear sustainable product innovation in mind in their further professional careers. First prize from the Eco-design Award for students 2019 went to the project

⁶⁵ <https://www.vlaamsbouwmeester.be/nl/subsite/terug-in-omloop> (Dutch)

⁶⁶ <http://www.ovam.be/potterij> (Dutch)

⁶⁷ www.reburg.world (Dutch)

⁶⁸ <http://vlaanderen-circulair.be/nl/aan-de-slag/vorming-lezingen-en-workshops> (Dutch)

⁶⁹ <http://www.ecodesignlink.be/en/ehe-kit> (English)

Fibio, an external filter for washing machines that stops up to 97 percent of the microplastic fibres, won by Laure Herweyders, student from UAntwerpen.

- Circular Flanders works together with the Civil Society Transition Network to create an interactive roadshow⁷⁰ for citizens on circular/sustainable and socially responsible cities and municipalities of the future.

Wallonia

- The **RESSOURCES Network**⁷¹ consists of non-profit companies involved in recovery and recycling in Wallonia and Brussels. It ensures the development and professionalisation of its members by improving their visibility and cohesion, by representing them to external authorities, encouraging collaboration with the various actors in socio-economic life, and mobilising them around innovative projects. The Network is composed of more than 60 active members in Wallonia and the Brussels-Capital Region which receive, collect, sort, repair, recycle and resell products. It is active in the classical sectors (textiles, bulky items, electrical and electronic equipment) and emergent sectors (wood, bicycles, construction waste, green waste, industrial services and printer cartridges) of the recovery and recycling economy. The Network is becoming an essential actor in environmental protection. Reducing the production of waste and promoting the reuse of resources are drivers of local development, a vector of solidarity and a creator of local jobs. The Network has 69 members, 200 second-hand stores and 4,600 employees; annually it treats around 150 000 tonnes of goods and revalorises about 50,000 tonnes of goods.
- Investment in the **Reverse Metallurgy**⁷² initiative has been confirmed in Wallonia. The metallurgy sector participates in the development of a more circular economy through the recovery of scarce metals. The internationally recognised Reverse Metallurgy initiative aims to create a platform of industrial, technological and scientific excellence in Wallonia in recycling, creating added value and jobs. The platform brings together different projects.
 - The Pick-it axis, coordinated by Comet Treatments, concerns the sorting and separation of alloys. These are derived from the treatment of waste residues from scrap metal such as ELVs, WEEE and scrap collection. An essential condition of recycling these high added-value alloys is to be able to characterise and sort them using high performance tools.
 - The Biolix axis, coordinated by Comet Treatments, consists of putting into operation a first demonstration unit for the hydrometallurgical production of copper cathodes from polymetallic concentrates from the treatment of waste residues of scrap metal – ELVs, WEEE and scrap collection.
 - The Plasmarec axis consists of developing plasma-furnace technology with a view to treating various secondary materials and waste to recover non-ferrous metals, some of which are considered critical for European industry. Hydrometallurgical treatments are performed upstream/downstream of the furnace in order to improve the quality of the products.
 - The Pyrometallurgy axis is particularly aimed at the recovery of metallic materials from waste not only in foundries but in any other cycle that could maximise its value.
- In the same vein, we should mention the investments made regarding plastics and the support to competitiveness clusters. The **WALOSCRAP** I and II grants awarded until February 2019 to the competitiveness cluster Greenwin - specialised in green chemistry, environmental biotechnology and innovative building materials - have made it possible to identify and quantify the waste and secondary materials that could be exploited in Wallonia and for which R&D and investment

⁷⁰ <http://www.transitionnetwerkmiddenveld.be/betergem> (Dutch)

⁷¹ <https://www.res-sources.be/fr/res-sources-1> (English)

⁷² <http://www.reversemetallurgy.be/fr/presentation.html> (French)
<http://www.gre-liege.be/projets/129093/reverse-metallurgy.html> (French)

projects - both in terms of collection/ treatment and in terms of industrial valorisation - could be offered with the support of the GreenWin competitiveness cluster). Material deposits that have analysed are plastics and composites, refractories, bituminous, organic waste, construction and demolition waste.

- Following this analysis, Greenwin has decided to launch in April 2018 the Polymers Ecocircularity Platform for Industrial Transition (**PEPIT**)⁷³, to allow active players in the plastic value chain to interact, coordinate their activities, and facilitate the development of research and development projects to enable the transition to a new plastics industry. This collaborative platform involves experts from the Celabor, Centexbel, Certech, CTP, Materia Nova, Sirris and Cenaero research centers, and is also supported by the MecaTech (mechanical engineering) and the Plastiwin (plastics) competitiveness clusters. Projects identified through this platform will be able to apply to calls for projects organised by the competitiveness clusters launched at the beginning of 2019 as well as the R&I calls of the **COOPILOT**⁷⁴ programme with a focus on plastic from the regional administration (DGO6). They could also apply for additional funding (equity) to the SRIW (Société régionale d'Investissement de Wallonie) that aims at injecting into EUR 120 million in the sector.
- Wallonia has been committed to sustainable public procurement for many years. In addition to its action plan, specific tools are being developed to achieve this goal, such as a specific information session on circular public procurement, or an online platform to facilitate reuse in public procurement, developed by the RESSOURCES network (see above)⁷⁵.
- A **Green Deal on circular purchasing**⁷⁶ will soon be launched in Wallonia. It aims to foster the transition towards a circular economy through the purchasing policy of public and private buyers. The parties, either as a buyer or as a facilitator, will commit to set up two circular projects in the coming three years. The participants of the Green Deal will together make up a learning network.
- Green chemistry has gained momentum with the selection of Wallonia as one of the **six Model Demonstrator Regions**⁷⁷ that received advisory support from the European Sustainable Chemicals Support Service (ESCS). In the wake of this, the Walloon partnership on the bio economy (the Green Rooster) has been strengthened, aiming to participate in the development of bio-economics value chains with high added value. The sector of polymer-wood composite materials or high-performance plant fibres with low environmental impact for the development of light bio-composites and recyclables is under way. Bio-composites are used in different sectors of the cross-border zone: transport, construction, sport, furniture and consumer goods.
- Walloon innovation actors (research centres, competitiveness clusters, companies, universities, etc.) participate in numerous **collaborative projects**, Interreg, BIC, etc., to create new value chains. For example:
 - projects aiming at using renewable resources from the Franco-Belgian region: wood and natural fibres, such as hemp and flax;
 - the recovery of waste from the dairy industry (whey) and its transformation into high-value-added products such as polylactic acid (PLA), bio-based and biodegradable plastic;

⁷³ <https://www.greenwin.be/page/pepit> (English)

⁷⁴ <https://recherche-technologie.wallonie.be/fr/menu/acteurs-institutionnels/service-public-de-wallonie-services-en-charge-de-la-recherche-et-des-technologies/departement-de-la-recherche-et-du-developpement-technologique/direction-des-programmes-de-recherche/le-programme-coopilot/plastique/index.html> (French)
<http://www.wallonie.be/en/news/new-sector-recycling-plastic-wallonia> (English)

⁷⁵ www.leclirecup.be (French)

<http://developpementdurable.wallonie.be/theme/achats-publics-responsables> (French)

⁷⁶ <http://economiecirculaire.wallonie.be/green-deal> (French)

⁷⁷ European Commission, DG Growth: http://ec.europa.eu/growth/tools-databases/newsroom/cf/itemdetail.cfm?item_id=8641&lang=fr (English)

- the production of algae and the development of extraction processes for compounds of interest;
- the valorisation of beet pulp in new value chains such as in the food and chemical industries – detergents, paints, composites, etc.;
- the development of bio-based packaging.

Seeking synergies with other policy areas

Flanders

Economic and Innovation policy

In Flanders the transition to a circular economy is the shared responsibility of two policy domains: environment, and economy and innovation. Innovation policy focusses around industrial spearhead-clusters that are key in the Flemish economy. These clusters are collaborations between companies, the knowledge community and the government. Together, they want to set the bar higher for strategic sectors. The Flemish government supports a total of 20 clusters, which together represent a significant portion of the region's economy. Circular Flanders is building circular economy principles into industrial clusters, that way circular economy becomes a recurrent theme of the innovation policy.

Another example of joint action is making the regular innovation and entrepreneurship instruments such as innovation subsidies and start-up grants of the Flanders Innovation and Entrepreneurship Agency (VLAIO) better accessible and more suitable for circular businesses and start-ups. Additionally, the Policy Research Centre for the Circular Economy (see also Examples of innovative approaches and good practice) is financed jointly by OVAM and the Economic Department of the Flemish government.

Climate policy

The climate challenge is often framed as an energy problem to which diminishing energy demand and greening energy generation are the solutions. But we now understand that high energy demand is closely linked to the way we use resources. Framing global warming as a materials problem and one caused by the linear economy opens perspectives for new solutions. OVAM believes that the transition to a circular economy can be a cross-sectoral strategy to lower energy use in Flanders and abroad, thus helping to realise the climate goals.

OVAM is currently taking initiatives to clarify the link between circular economy and fighting climate change. It has done a number of research projects in which the impact of the circular economy or resource efficiency on greenhouse gas emissions is investigated. One example is a study commissioned by the Flanders Environment Agency (MIRA), and supported by OVAM, about the carbon footprint of the Flemish consumption⁷⁸.

A second example consists of studies about the modelling of aluminium and copper flows in Flanders which also include the impact on carbon dioxide emissions⁷⁹.

As an answer to the Paris Agreement, the Flemish government did announce a number of Flemish climate summits that should result, in the coming years, in the following outputs.

- A climate pact with additional commitments for the short term made by the government and other actors. On 1 December 2016, the Flemish government concluded a **climate and energy pact**⁸⁰. A high number of commitments relate to circular economy.

⁷⁸ <https://www.milieurapport.be/publicaties/koolstofvoetafdruk-van-de-vlaamse-consumptie> (Dutch and English)

⁷⁹ <https://www.ovam.be/het-aluminium-model> (Dutch)

⁸⁰ <http://www.vlaamseklimaattop.be/engagementen-ivm-het-thema-circulaire-economie> (Dutch)

- A **climate plan** with concrete policy actions for the period 2021–2030.

In anticipation of this process, OVAM produced a policy paper on the relationship between the circular economy and climate change. The paper⁸¹, published in May 2018, shows how there is a close relationship between a linear economy and the unsustainable management of materials on the one hand and emissions of greenhouse gases on the other hand. The paper includes seven policy recommendations as a plea for integrating circular strategies into Flemish climate policies.

Spatial planning – land as a resource

As OVAM is the authority responsible for waste, the circular economy and sustainable soil management, links between soil management and the circular economy are actively encouraged. The circular economy needs space, preferably in vibrant areas where links between different functions can take place. Polluted and abandoned sites often are well-located for a circular purpose. Two major approaches have been developed or are in development to encourage synergies between the two policy areas. Firstly, efforts are made to integrate circular principles in permits and policy instruments such as brownfield reconversion agreements. Secondly, pilot projects, called *Terug in Omloop*, are being developed to encourage new policy principles such as the circular economy. As public authorities are often involved in brownfield development projects, they can play a crucial role in setting up circular partnerships.

Employment policy

According to calculations, the circular economy could generate EUR 2.3 billion worth of added value for Flanders and create 27000 new jobs, 1 per cent of employment in Flanders. Two NACE⁸² sectors, waste management and recycling (NACE rev. 2-38), and wholesale waste and scrap (NACE rev. 2-46.77) were selected for study, and methodologies from two existing studies⁸³ were applied using the Flemish input-output tables. One study by the Ellen McArthur Foundation focused on Europe with a time horizon of 2025, while the other by the Netherlands Organisation for Applied Scientific Research (TNO) focused on the Netherlands with a time horizon of 2020. The hypotheses in both studies were taken over as such and therefore the figures must not be interpreted as exact forecasts, but as order-of-magnitude estimates that can serve to emphasise the importance of innovative concepts and policy choices.

For the moment there are no initiatives to update the numbers, given the fact that no improved methods are available that would allow more accurate numbers, as the approach using NACE codes, based on well-defined sectors, cannot easily be matched with the concept of circular economy, which is a system transition aimed to affect many jobs to various extents.

Greendeal Circular Economy in the built environment

According to the Flemish climate plan, our carbon footprint must decrease by 35% by 2030 and by 90% by 2050. If we want to achieve these goals, we must urgently invest in the circular economy, and more specifically in circular construction. In a circular building economy, products and materials are reused as much as possible and the residual waste is minimized. It can be explained by 3 main principles:

1. the design should be **change-oriented**: this is a design and construction strategy that assumes that the needs and wishes of users and society will continue to change. The goal is therefore to create buildings that efficiently support that change.

⁸¹https://ovamenglish.login.kanooh.be/sites/default/files/atoms/files/ENG.OVAM_brochure.circulaire%20economie%20en%20klimaat.pdf (English)

⁸² NACE: Statistical Classification of Economic Activities in the European Community

⁸³ Ellen McArthur Foundation, 2012. *Towards the Circular Economy. Economic and business rationale for an accelerated transition*. Ellen McArthur Foundation, Cowes, UK
Netherlands Organisation for Applied Scientific Research, 2013. *Kansen voor een circulaire economie in the Netherlands*, TNO, Delft, Netherlands

2. materials should be **reused and recycled** as much as possible with the highest possible retention of value. This requires new business models and cooperation throughout the construction chain.
3. Materials can only be reused in a **high-quality** (and safe) way if they have an identity and documented history. The concept of a materials passport registers all materials in a building on a digital platform and makes buildings a true resource depot within this learning network.

In 2018-19 OVAM and Flanders Circular prepared a Green Deal Circular Building. This is a gentleman's agreement between several actors in the building sector, government and several facilitating organisations who will work together for four years on the implementation of the circular economy principles in the construction sector. The public-private partnership steering committee Circular Flanders, the OVAM (Flemish Public Waste Agency) and the Flemish Building Confederation are the initiators. On 22 February 2019 the Minister of Environment, Nature and Agriculture and the initiators OVAM, Circular Flanders and the Flemish Association of Construction companies have signed the Green Deal Circular Economy in the Built Environment together with more than 250 private and public real estate developers, architects, contractors, material producers, researchers and facilitating organisations. Each organisation has committed to carry out at least one pilot project on the principles of circular construction. Within this learning network the main goal is to experiment, to share their knowledge and their experiences with other companies.

To reinforce the learning process, there is a group of researchers who will start with **action-based research**. The knowledge of the researchers and the experiences of the actors will be combined in knowledge sharing network events and an e-learning platform. The group of researchers is funded for 3.5 years with a total of EUR 1.25 million. The Green Deal between the different actors in the construction sector is an agreement for four years.

The initiators create a good learning environment, for example to give feedback on existing tools and methodologies and by organizing network days and an online learning platform. In addition, a research group identifies legal, economic and other thresholds. Together we formulate solutions⁸⁴.

Flanders does not have a special policy regarding the import of materials and products.

The Greendeal Circular Procurement can have an indirect effect though on the sustainable/circular characteristics of products and materials that are put on the market. Also, end-of-waste criteria could play a role in increasing the share of secondary materials on the market. The main leverage for making imports more sustainable lies in product policy measures, which fall under the responsibility of the federal authorities.

Indicative estimates of the economic benefits of the circular economy for Flanders points to a savings in material costs of 2–3.5 per cent of the Flemish GDP and the creation of 27,000 additional jobs, ranging from high-tech to lower-skilled ones⁸⁵.

⁸⁴ <https://www.vlaanderen-circulair.be/en/cases-in-flanders?form=casesIndexForm&q=§oren%5B%5D=2&provincies=#casesIndexForm> (English)

⁸⁵ SuMMA. 2014. *Verkennde analyse van het economisch belang van afvalbeheer, recyclage en de circulaire economie voor Vlaanderen* (Exploratory analysis of the economic importance of waste management, recycling, and the circular economy for Flanders). [https://www.vlaanderen-circulair.be/src/Frontend/Files/userfiles/files/summa_economisch_belang_8%20\(1\).pdf](https://www.vlaanderen-circulair.be/src/Frontend/Files/userfiles/files/summa_economisch_belang_8%20(1).pdf) (Dutch)

Wallonia

The Second Multiannual Plan 2016–2019 of the **Employment-Environment Alliance** was adopted by Wallonia in October 2016 and is an integral part of the Marshall Plan 4.0. Its theme is sustainable construction – insulation and building renovation while improving the energy efficiency of buildings and work on building materials, particularly flat glass – which covers the three pillars of sustainable development. These are the economy, including the creation of green jobs and economic development; the environment, ensuring fewer negative impacts; and the social aspect, involving improvement in quality of life, lower electricity bills and training. The general objective of the Plan is to reduce energy bills and our impact on the climate by supporting Walloon companies in the construction sector by creating new skills and new jobs. This will also promote economic development through investment in sustainable construction and renovation, which will have positive environmental impacts and improve the comfort of citizens. The Employment-Environment Alliance strategy is also based on an innovative governance dynamic – mobilising and coordinating public authorities, households and private actors in the construction sector around concerted action to respond to the challenges of energy transition, climate and employment. The recent focus in the implementation of this Alliance is on the development and promotion of Walloon innovative and sustainable materials. Initiatives will be launched to promote these kinds of materials and make it easier for them to be used in construction and renovation projects.

In the context of the Walloon Sustainable Development Strategy, we can mention two initiatives:

- The Strategy describes the progress made by Wallonia towards sustainable development. The description covers three dimensions: here, tomorrow and elsewhere. In this last dimension, some indicators are used to address some of the pressures exerted by Wallonia on the rest of the world. It is a first step that should be developed in the future.
- According to the Strategy's action plan, a vision for a sustainable food system in Wallonia has been developed with all the actors involved. The vision includes six strategic objectives. The one on governance addresses the global dimension of food and plans systematic evaluation (ex-ante, on-going, ex-post) of the impacts of public policies that influence international trade in raw materials and food products⁸⁶.

Resource efficiency and circular economy policy initiatives from subnational to local level

Flanders

Sector federations are partners in Circular Flanders

Circular Flanders is a private-public partnership in which several important sector federations are involved as partners: Agoria for the technology sector, Fevia for the food sector, Vlaamse Confederatie Bouw (VCB) for the building sector, Essenscia for the chemical industry and life sciences, and Go4circle for environmental companies. This means that these sectors are actively involved in all the activities of Circular Flanders and have also pooled resources to make the transition to a circular economy in Flanders possible.

Cooperation with key industrial clusters

Circular Flanders is also working closely with the key Flemish industrial clusters Catalisti, sustainable chemistry and plastics; SIM, materials; Smart Energy Region, energy; and VIL, transport and logistics. The Flemish innovation policy is focused on these key industrial clusters which are active in strategic economic

⁸⁶http://developpementdurable.wallonie.be/sites/default/files/user_uploads/Referentiel_AD_WEB_compressed.pdf (French)

domains and are a cooperation between companies, research institutions and the government. The key industrial clusters will also work out projects about circular economy.

Project ‘fashion flows’⁸⁷

Fashion Flows is a cooperation between the city of Antwerp, Plan C, the Flanders Fashion Institute (FFI) with support of the foresight and design studio Pantopicon to **make the fashion sector more circular**. Fashion Flows studies how fashion companies can adapt the traditional linear business model to a more circular approach. Several innovative experiments concerning circular fashion were done, including a clothing library for designers, modular and tailor-made shoes and a smart washing label.

The **close the loop tool**⁸⁸, a guide to the circular fashion industry, is a Fashion Flows spin-off. For each phase of a product lifecycle (resources, design, production, retail, consumption and end of life) the tool formulates five strategies that could contribute to a circular fashion industry. In addition, this tool offers a lot of practical tips and tricks that refer to existing platforms, research that has already been done, as well as organisations that make important contributions to the circular economy. It also contains a database of cases with inspirational examples for both entrepreneurs and consumers.

Circular lighting in Kortrijk

The city of Kortrijk, with support from OVAM, has decided to lease the lighting in its library, rather than buying it. For 10 years, Philips will own the lighting and be responsible for its maintenance. The pioneering project is meant to inspire other cities and municipalities, formulating policy recommendations for procurement.

For an overview of the many initiatives taken by different actors in Flanders, see: <http://www.vlaanderen-circulair.be/nl/doeners-in-vlaanderen> (Dutch)

Wallonia

A **Circular Economy axis** has been developed as part of the **Competitiveness Cluster Policy**⁸⁹ in Wallonia. This will be developed with the support of the European Regional Development Fund (ERDF) and will focus on the joint use of material flows and energy.

A competitiveness cluster is a grouping of companies, training centres and public or private research units, in a given geographical area (Wallonia), committed to a partnership-based approach intended to generate synergies in innovative projects. Such partnerships are structured around a market and the related technological and scientific field, and must achieve the critical mass needed for competitiveness and international visibility. The three main components (companies, training, research and innovation) brought together by the three priorities (partnership, actual projects and international visibility) are the key elements of competitiveness clusters.

The government has continued implementation of the Competitiveness Cluster Policy in the context of the **Smart Specialization Strategy**. In 2016–2017, 20 projects were funded with total investments of EUR 65 million, of which EUR 40 million came from public funds.

The **six sectoral competitiveness clusters in Wallonia** are:

- Agro-industry (WagrALIM);
- Aerospace (Skywin Wallonie);
- Green chemistry and durable materials (GREENWIN);
- Biotechnology and health (Biowin);

⁸⁷ <http://www.fashionflows.be/> (Dutch)

⁸⁸ <http://close-the-loop.be/en> (English)

⁸⁹ <http://clusters.wallonie.be/federateur-en/> (English)

- Transportation and logistics (Logistics in Wallonia);
- Mechanical engineering (Mecatech).

The integration of resource efficiency/circular economy is a cross-cutting priority within all clusters. Some are particularly active in the field of **eco-innovation**, such as the Eco-Building cluster promoting responsible building and construction techniques; CAP 2020 which focuses on the building industry and reducing energy consumption; Technology of Wallonia Energy, Environment and Sustainable Development (TWEED), which focuses on renewable energy, energy efficiency, the climate impact of industry and the service sectors, green products and services; and GreenWin, which supports competitiveness, innovations in green chemistry, sustainable materials, techniques for reuse, recycling end-of-life products and using landfills as a source for raw materials.

GreenSkills: continuing and vocational training for eco-innovative Walloon industry. The GREENWIN cluster, in partnership with the three main sectoral federations, Essenscia, CCW and ECGF, and centres of competence, Cefochim, GREENWAL FOREm and Environment, has developed training for businesses as well as universities, research centres and government agencies. The aim is to improve the competitiveness of Walloon businesses by strengthening their eco-innovation capacity in the development and commercialisation of new eco-innovative approaches, methods and technologies.

The topics covered in GreenSkills have been enlarged and now include eco-innovation, life-cycle analysis, sustainable chemistry, waste recovery as raw materials, optimisation of the energy performance of industrial processes and buildings, and the use of innovative materials for the construction and sustainable renovation of buildings.

A **circular economy voucher scheme** was adopted in July 2017. The vouchers will allow companies to call on the services of specialised experts to assist them in the eco-design and development of sustainable products and services, as well as in the optimisation and improvement of industrial processes and organisational processes. Experts will also be able to assist entrepreneurs in thinking about the evolution of their business models, using the logic of functionality. The maximum value of a circular economy voucher is EUR 15000 per year.

The Green Rooster (Le Coq Vert)⁹⁰ is an initiative launched by a few key public and private players in order to stimulate economic development in bio-based chemistry in Wallonia. The development of a new bio-based chemical sector, in which biomass would replace non-renewable fossil resources, is part of the Wallonia Strategy for Green Growth. This initiative is expected to become more significant thanks to the involvement of Wallonia in the EC's Model Demonstrator Regions programme. The Green Rooster initiative is still very active in the development of the bio economy in Wallonia, with its partners involved in the Demonstrator Pilot Project's six Model Regions, and active in BIC/BBi and the Vanguard Initiative.

MADE DIFFERENT⁹¹ promotes digital technology as a lever for the circular economy in a programme to raise the awareness and support of Walloon industrial companies in their transformation to Industry 4.0. This programme, in collaboration with FEDUSTRIA WALLONIE and the CENTEXBEL and WOOD.BE Research Centers, targets all industrial sectors and supports process-oriented manufacturing innovation. The aim is to support industrial production in Wallonia by making businesses more sustainable and competitive. Seven technological transformations plus a transformation of business models have been identified as essential elements to make our companies truly factories of the future:

- world class manufacturing technologies;
- end-to-end engineering;
- digital factory;

⁹⁰ The Coq Vert's website: <http://www.coqvert.be/en> (English)

⁹¹ <http://madedifferent.be/en> (French/Dutch/English)

- human-centred production;
- production network;
- eco-production;
- smart production systems;
- smart business model.

The programme follows a two-phase transformation plan: first awareness and then support.

At the European level, Wallonia is particularly active in the Vanguard Initiative's pilot projects and is involved in several **interregional collaboration partnerships** selected by the EC, including the **Interregional Innovation Partnership on Bio-Economy** and the **European Innovation Partnership on Raw materials**.

Other resources

Examples of policies which go beyond "material resources"

Flanders

In Flanders the concept of the circular economy was enlarged in 2016 to **go beyond material resources** and also include **water, energy, spatial planning and food**. This was done in the new strategic outlook *Vision 2050: a Long-term Strategy for Flanders*, published by the Flemish government in March 2016. This forward-looking policy document sets out a vision for an inclusive, open, resilient and internationally connected region that creates prosperity and well-being for its citizens in a smart, innovative and sustainable manner. Vision 2050 provides a strategic response to the new opportunities and challenges Flanders is facing. This long-term strategy aims to accelerate some of the essential societal transformations (for example, transitions) and will require radical innovations to the way people live, work and enjoy life. Vision 2050 is supported by several key areas of action, namely the seven transition priorities, in random order:

- circular economy;
- smart living;
- industry 4.0;
- lifelong learning and a dynamic professional career;
- healthcare and welfare;
- transport and mobility;
- energy.

The implementation of these transition priorities is cross-sectoral and in collaboration with innovators, entrepreneurs and stakeholders. Bringing these transitions into action through **collaborative partnerships** will offer tremendous opportunities for citizens, organisations and companies that turn the goal of sustainability into a strategy.

The circular economy transition priority is described as follows in Vision 2050:

*'In a circular economy, we are more efficient with **raw materials, energy, water, space and food** by closing cycles in a smart manner. Natural resources are reused wherever possible. Smartly-designed products based on biodegradable and recyclable materials will form the basis of smart material cycles, in order to create less waste and reduce resource consumption.'*

Additionally, as mentioned earlier, synergies are being developed between land and soil management and the circular economy. Soil and land are increasingly seen as a resource. (see Seeking synergies with other policy areas for more information)

Forests and biodiversity

- The **Walloon Forestry Code** was revised in 2008 to ensure the sustainable use of forestry resources by seeking an optimal dynamic balance between the economic, ecological and social roles of forests.
- **Programme for the Endorsement of Forest Certification (PEFC) certification of sustainable forest management:** the PEFC certification scheme used in Wallonia is recognised by PEFC International. Certified, by PEFC for example, wood products are required in public procurement⁹².
- **Pro Silva**⁹³ is a forestry management category 'based on quality management that respects the natural processes of forest ecosystems while ensuring economic viability. It has two main goals in Wallonia: production and protection.
- **Game management plans** in Wallonia endeavour to maintain an equilibrium for species populations and their habitats. This is to ensure that both game species and forest resource use are compatible.
- **Sustainability criteria for biodiversity** are included in material resource efficiency, from energy whether renewable or not to food – fish stocks, agricultural products – or any other raw material production/utilisation, clothing, buildings, etc. These criteria are used in various policy instruments including:
 - energy: windmills and wind farms are subject to environmental impact assessment (EIA) which includes biodiversity criteria;
 - agriculture: agri-environment measures and cross compliance;
 - hunting and fishing: game and fishery management plans;
 - forestry: forest management plans.

Soils

The **Soil Decree**⁹⁴ (2018) and its Order of the Walloon Government aim to improve the compatibility between land use and soil conditions, and provide tools for recycling polluted soil as well as soil from excavation works. The management of excavated land is also linked to the PWD-R.

The way forward

Reflections on future directions of policies on resource efficiency and circular economy

Federal

Belgium seems particularly suited to develop a strategy for the more efficient use of resources. Through its industrialisation, Belgium has, in fact, developed technical expertise and a powerful raw material transformation industry. As technology changes and traditional deposits become less available, Belgian companies have innovated and are now recognised worldwide in the field of recycling and waste collection, areas where know-how and high added value allow access to promising and nearby markets. The economic challenge, which transcends institutional borders, calls for optimal coordination of the different levels of power. Additionally, the development of innovative industrial practices, such as circularity, industrial symbiosis and eco-design, is crucial to achieve a resource-efficient, circular economy. Therefore, some reflections for the future are as follows.

- Research and innovation should be stimulated in order to achieve a more efficient (re)use of raw materials, and with this an increase in productivity and competitiveness for companies.

⁹² <http://www.pefc.be/fr/> (French)

⁹³ <http://www.prosilvawallonie.be/> (French)

⁹⁴ <https://dps.environnement.wallonie.be/files/Document/L%C3%A9gislation/version%20MB%2022.03.2018.pdf>
http://www.ejustice.just.fgov.be/mopdf/2018/10/25_1.pdf#page=318 (French)

- Since those issues are complex and require the intervention of several policy domains, it is often complicated to coordinate the policies in an efficient way in Belgium. Obviously, this is due to the country's institutional structures – with competences split between the federal government and the regions, as well as governments with different compositions at each level. Although dialogue bodies do exist, this structure complicates making decisions that best complement each other.
- The absence of some key goal indicators, such as exist for other environmental policies, is a handicap, too. The existence of such indicators has an influence on the motivation and the decision-making of all economic actors by giving them an orientation. It would also facilitate communication to consumers and citizens who also have a role to play.
- Since the price of the majority of secondary raw materials remains higher than the price of primary raw ones, the price signal sent is not the right one. This a major obstacle.
- The behaviour, habits and expectations of consumers, resulting from the current economic model, such as the constant need for change, the desire to own, the longing for abundance, etc., are major obstacles to transition. Therefore, there is work to be done in education, in the media sector, etc. Indeed, favouring the emergence of citizen and local (bottom-up) initiatives can also help gradually influence mindsets.

Flanders

Several reflections on implementation challenges have come up.

- Moving from an end-of-life waste policy towards a circular economy requires another way of thinking. Currently, we seem to lack imagination on what a truly circular economy could look like. This leads to a dependency on known instruments and models. The virtual city, Reburg, demonstrates new ways of thinking.
- The integration of circular economy and innovation policies is crucial and an ongoing challenge. This goes beyond technological innovation.
- Integrating different policies, such as product policy, into circular economy is a challenge at both the EU and national levels. This is especially the case in federal countries such as Belgium, where relevant circular economy policies are not necessarily situated at the same level of competence.
- Currently, Flanders lacks quantified targets for the circular economy. The political will to establish a circular economy exists and the development of indicators is ongoing, but the challenge remains in how to link research on indicators to proper circular economy targets which go beyond traditional waste targets
- The role of the consumer needs to be further addressed, by objectively and interactively informing them about sustainable consumption and production patterns, leading to policy changes. The increase of transparency in several value chains through the sharing of information (big data), and more cooperation can lead to a more sustainable value sharing throughout the economy. It could also lead to a better-informed consumer who makes more conscious choices, which creates a market for circular products and services.
- Policy interventions such as taxation and price incentives taking account of externalities, innovative (product) regulations, procurement rules are measures that can stimulate the demand and make circular models economically viable and competitive.
- Legislative barriers, that hinder the transition towards a circular economy, need to be tackled. Specific examples are:
 - contradictions between legislation and subsidies for energy reduction and material aspects, for example insulation that hinders recycling after use;
 - existing legislation that leads to an ongoing focus on virgin raw materials due to the lack of pricing of externalities – external costs are not included in the cost of virgin materials, for example in public tenders in which the price is a dominant assessment criterion;
 - legislation that makes waste generation preferable to industrial symbiosis, internal loops or resource efficient solutions, for example product specifications that exclude the use of recycled content;

- extended producer responsibility (EPR) that is being avoided by web retailers so the cost has to be paid by the Belgian consumers.

Wallonia

Although the terminology for circular economy, resource efficiency and raw materials is harmonized at European level, it is important to ensure that it is also shared and understood by stakeholders and the public.

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